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INTRAABDOMINAL AND INTRAPELVIC ADHESIONS, POSTOPERATIVE AND OTHERWISE

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Adhesions involving abdominal and pelvic viscera are primarily the result of injury to or destruction of the epithelial layers of two contiguous surfaces. When serous areas are denuded the subserous connective tissue layers become united by firm strands of fibrin, into which migrate an abundance of wandering cells (fibroblasts), and thus eventually a true connective tissue union is created. Adhesions competent to withstand the pressure of fluid, and to prevent the extension of infection, may be formed within two hours.

In the earliest stages of their development adhesions are flimsy or unorganized and are easily separated by the finger; but later they undergo organization, become dense, then gradually contract in the same manner as does scar tissue. At this stage of their development separation may be difficult or even impossible without extensive dissection and perhaps serious visceral injury. The eventual character and fate of adhesions will depend somewhat upon the nature of the cause originally operating in their production.

It is the object here to direct particular attention to adhesions due to mechanical or traumatic injury. Traumatic adhesions are usually the result of damage to peritoneal surfaces during operative procedures, although it is not always possible to determine definitely whether certain postoperative adhesions owe their origin to trauma or to mild infection.

When the surgeon is unfortunately called upon to perform secondary celiotomy for the relief of either continuing or recurring abdominal symptoms, he is sometimes amazed at the conditions revealed. In some instances the secondary pathologic process, as represented by extensive organized adhesions, evidently traumatic in origin, may be infinitely more serious than the lesion for the relief of which the original operation was undertaken. On the other hand, doubtless every surgeon has been astonished at the wonderful efforts made by nature in certain cases to repair the damage primarily inflicted by the original operator.

On many occasions surgeons have closed abdominal wounds feeling assured that the patients would be permanently relieved, yet they returned months, or perhaps years later, complaining of persistent constipation, abdominal pain, vesical irritability, and various other obscure symptoms resulting from the lesions which required operation primarily. What do we tell such patients? "Adhesions—they will soften and disappear in a short time and you will be well." This is what we always hope will happen, but disappointment is not uncommon. However, I have oftentimes closed the abdomen where all the viscera were incorporated in dense organized adhesions, fearing to separate them because of the tremendous amount of infectious material present, and the patients had no trouble afterwards. Thus it may be seen that some patients of this class obtain relief, whereas others continue to suffer from vague abdominal disturbances. Patients having small adhesive bands are in many instances relieved spontaneously, the bands stretching sufficiently to release the constricted organs; but firmer and more extensive adhesions are prone to persist, especially where the intestine is adherent to tubal or ovarian stumps or to the peritoneum, where the omentum is adherent to the uterus, abdominal wall or the incision, or where the intestine is adherent to the line of incision. These are the cases in which the patients consult the surgeon secondarily, complaining of numerous vague or obscure symptoms referable to every intraabdominal organ. Thus many and varied may be the clinical manifestations resulting from inflammatory reactions and postoperative adhesions; and these are the patients who must finally be subjected to secondary operation to relieve constrictions and in a measure readjust or restore the abdominal viscera to normal relations.

The reason better results accrue from secondary than primary operative intervention lies in the fact that it is performed in the absence of infection and severe inflammatory reaction. Moreover, it must be remembered that, in the larger proportion of cases, the adhesions which follow the original procedure are not due to the operation, but the pathogenic lesions for which it was performed.

The chief causes for the development of postoperative adhesions are: (a) infection and pathologic changes present prior to operation, (b) extensive trauma with peritoneal denudation, (c)

infection and suppuration of the operative wound.

As a result of omental and intestinal adhesions to the line of incision in the parietal peritoneum, there is a tendency to downward traction on the transverse colon and stomach, which in large measure will account for the abdominal pain, nausea and vomiting. Formerly this was a common occurrence, when through-and-through silkworm gut sutures were used in closing the abdominal wall, because the peritoneal incision could not be perfectly approximated and the slight apertures between sutures permitted exposure of small areas of the cut edges with resulting omental or intestinal agglutination. Even the ordinary so-called running suture of catgut when used for peritoneal closure allows slight exposure of raw edges and favors the formation of adhesions.

Intraabdominal or intrapelvic raw surfaces left exposed, either from the separation of already existing adhesions or operative peritoneal injury, favor the formation of further agglutinations between denuded areas, damage parts, or between injured and healthy surfaces. Such adhesions form quickly and may become very firm and unyielding.

If intestinal segments are allowed to remain for a considerable time outside the abdominal cavity and become dry from exposure to air, if moistened gauze pads in contact with them become cold, or they are subjected to rough handling, their resisting power is lessened, the smooth surfaces become rough, the coils agglutinate when replaced in the cavity, with resulting adhesions to parts or organs with which they come into contact. The same statement will apply to the omentum when exposed or roughly handled.

The presence of a drain, irrespective of its character, produces irritation and causes nature to effect an aggregation of surrounding tissue or to otherwise segregate it from the general cavity. And in doing this she must use whatever may be in contact with the drain—usually the intestine—to form the protective adhesions. This is not only operative in protecting the cavity, but the intestines become agglutinated, forming a dense mass and obstruction may finally follow. Inflammatory reaction about a drain may cause adhesions between the urinary bladder and adjacent organs, especially when the area being drained is in close proximity to the bladder.

Intestinal obstruction may also occur when a segment of intestine is sharply angulated and adhesions form at or near the point of flexure. Sometimes a knuckle of intestine becomes adherent to a denuded area and causes fatal obstruction. The same result may obtain from the formation and contraction of long, string-like bands extending across the intestine.

Exposed raw surfaces on tubal and ovarian stumps seem to favor the production of intestinal and vesical adhesions; and when on the right side of the appendix may be implicated. An omental segment freed from adhesions is sometimes left to take care of itself, and its raw surface may again become adherent to adjacent structures.

So-called traumatic or plastic peritonitis occasionally follows operations in aseptic cases. Exudation of plastic lymph occurs around denuded areas; this becomes organized and adhesions form between opposing surfaces. Such changes are purely reparative in character.

When distended with gas following celiotomy, the intestines are brought into more intimate contact with exposed raw surfaces and definite union may promptly result.

When patients are allowed to remain in one position for any extended period of time following operation, adhesions may occur between the opposed raw surfaces from prolonged contact and immobility.

In summarizing the causes which may be operative in the production of abdominal and pelvic adhesions we must therefore conclude:

1. That raw surfaces left after celiotomy favor the formation of adhesions;

2. That undue manipulation of intestines or omentum, within or without the cavity, may cause adhesions between intestinal coils, intestine and parietal peritoneum, or intestine and omentum;

3. That the employment of drains of any kind favors the formation of intestinal adhesions from contact;

4. That uncovered pedicle stumps often become adherent to adjacent structures, and drops of blood about denuded areas may become organized and favor the production of adhesions.

To prevent the formation of adhesions the greatest possible care should be exercised in the execution of all abdominal and pelvic surgical procedures. It is obvious, therefore, that the proper treatment of postoperative adhesions consists in prophylaxis; that is to say, the surgeon should be careful in his operative technic to do nothing which will favor their formation. Raw surfaces and damaged peritoneal areas must be adequately covered or repaired. This applies to denuded surfaces of all intra-abdominal and intra-pelvic viscera, also to raw extremities of stumps and pedicles. Omental segments which have been freed from adhesions should never be left exposed; if small they may be covered with neighboring healthy omentum; if extensive they should be ligated and removed.

At present drainage is seldom employed, in

comparison with former times, but whenever utilized from necessity a gauze strip covered by rubber tissue is preferable to tubes and should be allowed to remain in situ the shortest possible time.

Rough handling of the intestine within or without the cavity must be avoided, and when outside gauze pads saturated with hot normal saline solution must be used as a covering, and solution added at frequent intervals to keep them thoroughly moistened and maintain proper temperature. Gentleness of manipulation of the abdominal and pelvic contents will do much toward preventing the deposition of plastic lymph.

In peritoneal closure the divided edges should be elevated and held in correct apposition, a continuous quilted suture being used to approximate the serous surfaces, thus leaving no raw edges to attract the omentum or intestine. This method of closure also prevents inclusion in the suture of omentum adjacent to the wound.

After abdominal operations patients should not be allowed to remain in one position for any length of time (unless there is danger of hemorrhage), even if they have to be moved by lifting the mattress on either side—tilting them sidewise to a certain degree—thus shifting the intestines about within the cavity and preventing prolonged contact with surfaces to which they might otherwise become adherent.

It will be recalled that one of the rules of the great Lawson Tait was that, preliminary to celiotomy, the patient should be purged until so weak he could hardly stand. As a result at operation the alimentary tract would contain no feces, but would be distended with gas on account of the excessive purgation. We now know that the alimentary canal is placed in the most favorable condition for abdominal work by administering simple laxatives; there is then no hyperdistension with gas, such as follows preliminary purgation.

There are many cases in abdominal surgery in which obviously the operator must adapt his course of action to existing conditions. As a rule, I believe it inadvisable to separate extensive adhesions to permit the performance of a more complete or ideal operation. Some surgeons contend otherwise, but I have always assumed the attitude that if the various organs can perform their functions in the midst of adhesions, it is better to leave them alone and try to remedy the lesion present without disturbing them. My experience has led me to believe that the tendency to the formation of adhesions is more marked in some individuals than in others.

A moderate amount of normal saline solution introduced into the cavity at conclusion of the operative steps (in selected cases), especially where many raw surfaces are left from necessity, may assist in preventing adhesions. The solution keeps the intestines and raw surfaces separated, the oozing is checked, and the raw surfaces contract. Finally, after the saline has been absorbed, the contracted denuded areas are less attractive than before and the likelihood of adhesions lessened.

Examination of surgical literature at my disposal discloses only a limited number of contributions to the subject of intraabdominal and intrapelvic adhesions during the last two years. A few of what appear to be the more interesting and important articles, especially from a statistical standpoint, are presented in abstract form.

Mayer presents the following instructive summary, with commentaries, concerning his findings in 60 secondary gynecological operations:

1. Of the 60 patients, 52 (87%) had adhesions, and 8 (13%) had none;

2. Of 37 patients first operated upon elsewhere, all had adhesions, and of 23 first operated upon in the Mayer clinic 15 (65%) had adhesions, and 8 (35%) had none.

The author believes the development of adhesions is dependent upon imperfect asepsis, incomplete hemostasis, and inaccurate peritonization of stumps. He does not accept the theory that there is a predisposition to formation of adhesions at certain periods of life, nor that adhesions are favored by a peculiar constitution. A striking fact in the cases reviewed was that where pregnancy ensued between operations there were no adhesions.

In addition to perfect asepsis, accurate hemostasis, and adequate peritonization, the following factors have been suggested as important in preventing postoperative adhesions:

1. The avoidance of painting the abdominal walls with iodine;

2. The infusion of solutions, and,

3. The production of pneumoperitoneum at close of operation. Personally, Mayer does not object to the employment of iodine. He says no decisive results have been noted from introduction of humanol, that after its use adhesions were demonstrable in subsequent examinations with pneumoperitoneum and roentgenography even when there was no complaint of their presence.

Especial attention is called to difficulty in diagnosis. Frequently there are symptoms of adhesions when none is present, but there also may be adhesions without symptoms. The importance of demonstrating postoperative adhesions by pneumoperitoneum and the roentgen ray is emphasized.

Haug and Heudorfer state that in the Garré

clinic, Naegeli found that following celiotomy adhesions could be demonstrated in 78.1% of the total cases, and in 91.2% of patients subjected to more extensive operative procedures. Martius, based upon his findings in 33 repeated Cesarean sections in the Bonn clinic, assumes that adhesions occur least frequently after pelvic operations, whereas Loehnberg maintains the opposite view because of the prevailing absence of movement in the pelvic cavity.

The findings with respect to adhesions in 236 cases in which secondary celiotomy was performed are tabulated. The first operations were performed elsewhere in 140 cases, and in the Garré clinic in 90. Of the patients first operated upon in the clinic, 15.7% remained free from postoperative adhesions; of those first operated upon elsewhere only 10.7% remained free. Distribution of the adhesions: abdominal wall, 120 cases (51%); omentum, 128 (54.4%); genitalia, 142 (60.4%); sigmoid, 40 (17.4%); intestine other than sigmoid, 127 (45.5%). Following vaginal operations no adhesions were demonstrable in 33.3% of cases.

The causes for the formation of adhesions before operation are the same as those of postoperative adhesions, viz., inflammatory processes, mechanical and chemical injury of the peritoneum, and the irritation of an increased flow of blood in the peritoneal cavity. Operation may be followed by infection, failure of peritonization of ligated stumps, serous defects, drainage, etc.

Adhesions may undergo resolution spontaneously. Pregnancy may cause their disappearance. According to Payr, they cause complications in only 10 to 12%, and necessitate reoperation in only 3.5% of cases. The onset may be acute, causing ileus, or a chronic course may be pursued. For exact diagnosis careful pelvic and abdominal examination is necessary. Pneumoperitoneum is of great assistance. Treatment is difficult; operation must be performed carefully. The introduction of sodium chloride cannot prevent adhesions; possibly early stimulation of peristalsis by enemata, cathartics, and intravenous injections of hypophysin may be of value. Diathermy and the external application of heat have favorable effect. Occasionally, diagnostic pneumoperitoneum is curative. The final resort is celiotomy, but the cases must be carefully selected.

Studies were made on adhesions occurring after appendicitis and gastric ulcer by Girgolaff, who concluded that intraabdominal adhesions contain bloodvessels and nerves; that the latter occasionally reach a marked degree of development and may consist of branches of five or six nerve cylinders; that their development is dependent upon adjacent peritoneum. The symptoms depend upon the character of the nerves innervating the adhesions.

REFERENCES.

Mayer: Cited in *Internat. Abs. of Surgery*, February, 1923. 36, 73.

Haug and Heudorfer: Cited in *Internat. Abs. of Surgery*, December. 1923. 37, 571.

Girgolaff: Cited in *Internat Abs. of Surgery*, April, 1924. 38, 339.

INDUSTRIAL EYE ACCIDENTS*

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For the purposes of condensation, it is best to consider industrial eye accidents under two headings: first, cause and prevention; second, treatment.

CAUSE AND PREVENTION

Applicants for employment should be examined for ocular deficiencies before employment is given, and afterward at stated intervals, or when occasion arises. Examinations should be made by oculists, and not by general practitioners or nurses, and should be accurate but liberal in character. Examinations are beneficial to applicants for they may reveal ocular defects amenable to treatment, or unfold conditions indicating where and how applicants can work to best advantage and with a minimum amount of ocular damage. Examinations are also necessary to the other employees, for they exclude from shops, etc., contagious diseases and other ocular conditions menacing their safety.

Examinations are necessary to employers, for they exclude men unfit for occupation, and place on file the ocular status of each applicant given employment. Such records may become valuable in the future when litigation for ocular damages occur, and employees make spurious or unjust claims for injury. Examinations also discover monocular blindness, which is valuable information, for in many States the law holds that if a man is blind in one eye, and loses the other while under employment, the employer is responsible for total blindness.

The proper illumination of shops, offices, mines, etc., is greatly conducive to ocular health. Employees perform their best and safest work under suitable illumination. Ample daylight is the best illuminant, and artificial illumination should simulate daylight as nearly as possible. Employers should follow the advice of competent architects and illuminating engineers in such matters, and not trust their own judgment. Illumination should be ample, well directed and not glaring or excessive. Employees should be able to work without conscious ocular effort. The least number of accidents, the least wastage, and the best and most profitable work in shops occurs in the months of July and August,

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during the peak of the daylight illuminating period. Shop walls should be kept white, and windows, electric globes, etc., should be kept clean, as these precautions enhance shop illumination.

Most of the shops are glad to furnish suitable goggles to employees who will wear them. Their use is becoming more and more prevalent. All employes subject to shop accidents should wear them. The Pullman Company, The American Steel Foundry Company and other shops are enthusiastic concerning their use, and produce extremely encouraging statistics.

Employees should not remove foreign bodies from the eyes of their fellows. They do not understand such work, nor its importance or possible disastrous consequences. Their hands and tools are dirty, and they have no conception of asepsis. They do not use cocaine, and they injure a moving cornea criminally. Such cases should be sent immediately to the company doctor. If the foreign body is lodged on the conjunctival lining of either lid, he can remove it by eversion of the upper lid, etc., but, if it is lodged in the cornea, the employee should be sent to the company oculist, thus insuring skilful removal, less visual injury, and less litigation and financial loss. A large portion of damaged and lost eyes, with consequent litigation and awarded damages are the result of a disregard of these suggestions.

Lack of space precludes the possibility of enumerating the many accidents incident to employment, or the numerous safety devices that are constantly being invented to prevent ocular accidents in shops. Suffice it to say that no reasonable contrivance that may possibly defend the visual power of employees should be disregarded. Any other course is inhuman, and uneconomical to the employer. Shops should be cool, clean, and as nearly dustless as possible. Tools should be kept in perfect condition. Hammers, especially, should be frequently inspected, as so many accidents occur from hammers with softened or mushroomed edges. Emery wheels should be well protected. Molten metal vats should be handled carefully, and be well protected, and workmen handling this dangerous liquid should have their faces protected with masks containing goggles. Men working in great heat or excessive light as, for instance when facing blast furnaces or where electric welding is done, should not work there long at a time, and their eyes should be protected by blue or red glass screens and amber goggles. Miners' nystagmus is largely caused by deficient illumination, poor headlights, and working in a recumbent position, and it can be greatly diminished by better illumination, better headlights, white-washed walls, and working in the erect posture when possible. Many eyes are injured in office work by improper illumination, unnecessarily fine work and a disregard of refractive errors and incorrectly fitted glasses. The relief from such disadvantages is too obvious to require detailed comments.

In short, all occupations have their dangers. Relief measures for such dangers are continually increasing. It remains with employers and employees to utilize all measures for safety. Employers should provide all sensible safety devices, and urge their employment by personal persuasion and printed propaganda. Employees should gratefully accept such devices and constantly place them in service. This would insure—not the obliteration of accidents, but an enormous diminution in their number.

Treatment

Passing over the subject of lacerated wounds of the eyelids, I shall at once discuss industrial injuries to the eyeball itself, which may properly be considered under two headings; first, non-penetrating injuries and, second, penetrating injuries. To an audience composed of skilful ophthalmologists, it is unnecessary to say much upon the subject of non-penetrating injuries of the eyeball. I have nothing new to offer on that subject.

Minor ocular accidents may become exceedingly serious if improperly treated, and even, indeed, if properly treated. The removal of foreign bodies from the cornea, when properly executed, is usually a very simple affair. It must, of course, be done aseptically, under local anesthesia, with ample illumination, and under magnification. Particles may frequently be brushed off the cornea, by a cotton-guarded applicator but, if more firmly lodged, a Graefe knife, or spud, will be necessary. The cornea must be scratched as little as possible, for every scratch leaves a scar, and every scar diminishes vision, especially if centrally located. Operative trauma also invites infection, and serious damage is sometimes produced by a careless operator. Some particles are deeply imbedded and difficult of removal. The spud or knife should get *under* them, and *lift* them out, instead of scratching or picking around on the surface. Some particles during efforts at removal even drop through the cornea, and into the anterior chamber, whence they must be rescued by incision, irrigation, forceps or the magnet. Some particles leave a traumatized or sloughy base after removal, which should be cauterized by carbolic acid or some other cautery. Foreign body removal cases should usually be treated by irrigation, atropine, argyrol, bichloride of mercury ointment, a bandage and quiet. Some recover quickly; others are followed by infection, iritis, panophthalmitis, etc., and should be cared for accordingly, never forgetting that potent causes for trouble may be found in the lacrymal apparatus, the conjunctiva, sinuses, tonsils, teeth, kidneys, in syphillis, gonorrhea, etc.

When the foreign body penetrates the globe and remains lodged in it, a most serious condition confronts us. I shall assume that such fragments are steel (as they usually are), for this paper does not permit of my dwelling on copper, wood, glass, and other invaders. Foreign bodies may, of course, lodge anywhere. Spindling particles may stick in the cornea, with one end in the anterior chamber and the other end outside the cornea. They can be removed by forceps or magnet, or the foreign body may be in the anterior chamber, iris, lens, vitreous chamber, sclera, or in the tissues of the orbit. If in the anterior chamber, iris or lens, the fragment can usually be seen by illumination and magnification, but, if it is located posterior to the lens, or sometimes even in the lens itself, the *x*-ray will be required to indicate the locality. Ophthalmoscopic examinations are generally not especially valuable in detecting the presence and location of foreign bodies within the globe, although information can sometimes be obtained this way, and it should always be used. I also protest against using the magnet as a diagnostic instrument, as the damage produced frequently outweighs the value of any information obtained.

Reliable *x*-ray pictures can be made only by an expert, and even then they sometimes deceive one way or the other. I like profile and full-front pictures, and, if they are clear and reliable, I do not, as a rule, care for further localization. The ocular interior is a small cavity, and, if the quadrant of the globe where the invader is lodged is clearly indicated by good *x*-ray plates, the point of operative procedure should be well understood, and a good magnet has sufficient drawing power to remove the steel, unless it is held back by some serious retention. Localization is chiefly useful where doubt exists as to whether the foreign body is in the posterior portion of the lens, or firmly lodged in the sclera, or has passed completely through the eye, and rests in the tissues of the orbit.

In the latter condition, it is best not to interfere—so far as a magnet operating is concerned, for its removal by magnetic attraction is evidently impossible, unless a curved magnet point is passed into the socket, *around* the eyeball, and this procedure can hardly be either advisable or profitable. Small particles in this location are practically harmless, and large ones will produce so much ocular trauma that enucleation is advisable, and with it the removal of the large intruder. Fragments are sometimes lodged so firmly in the sclera that the magnet will not displace them, although a very strong magnet persistently and properly applied will almost always be successful. Loose or comparatively loose fragments are sometimes so covered with exudate that their removal is slow, but they always respond to the magnet in the end, while those that are uncoverd usually present themselves without much difficulty. Contrary to the opinion of some, foreign bodies in the lens should always be removed. Cataracts in such cases are always present, and the cataractous lens and foreign body can usually be expelled at the same time, or the magnet may be used if the particle is reluctant. Ample corneal incisions should be made in traumatic cataracts. Such lenses often have more consistency than one suspects, and it is dangerous to attempt delivery through a diminutive exit, and not much pressure on the eyeball should be made.

I cannot agree with the opinion of Haab that all foreign bodies should be removed through the cornea. Several years ago I proposed the rule that foreign bodies in or anterior to the lens should be removed through the cornea, and that all others should be removed through the sclera, unless the entrance wound is still open, the lens cataractous, and the foreign body small in which case the anterior route may be selected. I have never felt the necessity of changing this rule. It is the only rational one to follow. Let us call these two methods the anterior and the posterior routes. I understand the dangers of the posterior route. They are actual, but not comparable to the dangers of the anterior route, if the foreign body lies back of the lens, and it is swiftly and relentlessly dragged over the most sensitive portions of the eye anatomy. If the particle is small, smooth and can be drawn through the already cataractous lens and pupil and opened cornea, the result may be good; or, if the particle is small, smooth, and can be drawn (as recommended by Haab) along the floor of the vitreous, and gently, *very gently,* made to traverse the sensitive and fragile ciliary region, and then, as a bird floats through the air, to rise and pass through the pupil, without injuring the lenticular capsule or iris, and finally to gracefully drop, on the floor of the anterior chamber, to be then removed through a corneal incision, then, also, the result may be good. But, if the particle is large and rough and, upon the magnet's approach, bursts through everything that opposes it, dragging perhaps vitreous, ciliary processes, iris or lens, etc., with it, then indeed the result may not be good; it may be bad, *very bad*. I feel, therefore, that anterior route operations should be confined to foreign bodies that are situated in or anterior to the lens, (with the exception already noted) and where the particle can be withdrawn without leaving ciliary or other misfortunes behind.

Let us now turn to a consideration of foreign bodies located in the vitreous chamber, having passed through either the cornea or sclera, and their presence and location having been indicated by *x*-ray pictures. The operation is to be performed at one of the four quadrants of the eye, nearest the site of

the foreign body, between two of the recti muscles. I pick up the conjunctiva near the sclero-corneal junction with forceps, and make a triangular flap back to the cul-de-sac. With spreading scissors I undermine this flap, and lay it back. I plunge a Graefe knife into the sclera, near the sclero-corneal junction, but avoiding the situation of the ciliary processes. I enlarge this incision backward, in accordance wth the size of the projectile as shown in the *x*-ray plates, always making it a little too large, to facilitate an easy exit. I then have an assistant pull apart the opening with two small demagnetized hooks. The strongest magnet point is then placed in the opening and I await results. The magnet is tested from time to time to be sure it is working. If the foreign body resists, I switch the current off and on, to jerk the particle loose from any entanglements. In a vast majority of cases success follows. If several patient trials fail, I then change the blunt powerful point to a gently curved one, which is of course less powerful. I dislike exceedingly entering a magnet point inside the eyeball. It very much magnifies the danger of the operation but, if it becomes imperative, I gently pass it through the opening into the neighborhood of the foreign body —as indicated by the *x*-ray. I do this once, twice or thrice if necessary, but not more. If success does not follow, I desist—feeling that I have done all I can. The flap is closed with fine silk conjunctival sutures. Scleral sutures are unnecessary and dangerous, as too much force is required, and intraocular sutures invite irritation or infection.

Many traumatic cases are so manifestly hopeless at the start that immediate enucleation is the only rational, safe and conservative course to advise. Other cases, more hopeful at first, finally succumb to hopeless iridocyclitis, panophthalmitis, etc., and enucleation, and it must be remembered that many cases of steel extraction, where operative procedures have apparently been crowned with success, finally—after some months—must be regarded as utter failures, owing to profound intraocular lesions, due to trauma or the necessary operative interventions.

Concerning magnets, I have had experience with only three, Haab's, Sweet's, and Lancaster's. For general use, I prefer Sweet's. It has great power, and, if it could be kept cool, would answer almost all purposes. If I endorsed Haab's theory of removing all foreign bodies through the cornea, Haab's instrument would of course be a necessity on account of its strength, but, as I do not, Sweet's magnet seems to answer my purpose.

Compensation Claims

I desire to say something concerning litigation for ocular damages, although it is difficult to compress this into a few sentences. Such cases are usually tried first by a rather informal court—held by an Industrial Commission and these trials dispose of an enormous number of small cases, and have become a necessity. Comissioners are usually appointed by Governors, and are political in character. They are not lawyers, and they may be ex-laboring men or what not. Some of them are prejudiced in favor of employees, some in favor of employers, and it is difficult to secure an unbiased hearing. Many commissioners, however, are fair-minded, intelligent men, intent upon a proper discharge of their duty, and they render fair and equitable decisions as far as they are able. As a class, however, it may be truthfully said that Industrial Commissions should be greatly elevated in character, fairness and intelligence, if they are to perform their professional duties for the best interests of all concerned. Of course, decisions rendered in these informal hearings may be appealed, and carried to a higher court; but, as a general rule, this is not done, as the amount involved is too small to warrant the expense. Nevertheless, the decisions rendered are sometimes bewildering to the honest medical witness, who cannot understand why such peculiar verdicts are pronounced. One great reason for misunderstanding between courts and medical witnesses is the improper conception of Snellen's test types, and the fractions indicating visual acuity, and the inability of our profession to agree upon a table or rules formulating visual losses. For instance 20-40ths of vision was supposed to denote one-half loss of vision, whereas we all know that 20-40ths of vision does *not* cut off one-half of a man's visual capacity for work. Snellen never intended his fractions to indicate such a fact. They were devised only as an international language to indicate refractive conditions. This has caused great confusion in settling claims, and, although the error is now understood by most ophthalmologists and many courts, it is still a bone of contention that ophthalmologists should do their utmost to correct. Various individuals and committees have undertaken to construct tables indicating visual losses from industrial accidents. Most of them are so elaborate and technical, and endeavor to cover so much ground, that, while they *may* be clearly understood by their authors, they are not understood by the profession, and much less by employers, lawyers and courts.

The first necessary step in the clarification of this problem is a clear and tangible table for the settlement of monocular industrial visual losses. It must be understood, however, that no cold table of figures can completely compute visual deficiencies; it can operate only as a basis for professional and legal opinions; the balance of the problem must be worked out by the medical expert and the courts. In my opinion, a Compensation Table for monocular visual loss must be based on two simple, obvious facts: 1st,

normal vision must be estimated as 20/20ths; 2nd, industrial blindness must be estimated as 20/220ths of vision. Concerning the latter, a man is, of course, not actually blind if his vision is 20/220ths. He can earn money in some way, but he is sufficiently bereft of vision to denominate him as "industrially blind," for which he should receive full compensation if his case can be proved. Between these two extremes of vision; viz., 20/20ths and 20/220ths, equal and mathematically correct graduations of vision should be estimated, and I beg to submit a somewhat modified table devised by Dr. V. A. Chapman of Milwaukee, as being the most understandable and mathematically correct table before the professional and business world at the present time.

			Visual efficiency	*Loss of vision*
1	20/20	indicates	100%	0%
1	20/30	indicates	95%	5%
2	20/40	indicates	90%	10%
3	20/50	indicates	85%	15%
4	20/60	indicates	80%	20%
5	20/70	indicates	75%	25%
6	20/80	indicates	70%	30%
7	20/90	indicates	65%	35%
8	20/100	indicates	60%	40%
9	20/110	indicates	55%	45%
10	20/120	indicates	50%	50%
11	20/130	indicates	45%	55%
12	20/140	indicates	40%	60%
13	20/150	indicates	35%	65%
14	20/160	indicates	30%	70%
15	20/170	indicates	25%	75%
16	20/180	indicates	20%	80%
17	20/190	indicates	15%	85%
18	20/200	indicates	10%	90%
19	20/210	indicates	5%	95%
20	20/220	indicates	0%	100%

With this table as a foundation upon which to work, all such questions as optic atrophy, strabismus, corneal, lenticular and vitreous opacities, iritic adhesions, diplopia, choroiditis, retinitis, necessary changing occupations, etc., can be worked out by the medical expert, lawyers and the courts.

ACTINOMYCOSIS.

Many cases are difficult to diagnose definitely previous to suppuration or sinus formation. Even then if secondary infection is marked or the disease has been of long duration with contraction and induration of the tissues it may be impossible to come to a definite conclusion by the use of smears, cultural methods, or biopsy. The task is rendered less difficult, however, by the fact that the condition if acute will likely soon soften with suppuration and abscess formation. If chronic it is a slowly spreading process and if untreated a persistently recurring one. At some time it will exhibit an area or areas of softening and abscess formation that will make diagnosis easy. Radiation hastens this process and is occasionally the means of definite determination of the condition.—PAUL A. WHITE in *The Journal of the Iowa State Medical Society.*

ONE-HANDED SURGICAL KNOT

W. J. SULLIVAN, M.D.
Institute of Surgery
CHICAGO

A modification of the well-known one-handed knot demonstrated in the accompanying illustrations gives a very satisfactory knot which will not slip even on wet catgut, does not readily cut itself, and is exceptionally easy to tie.

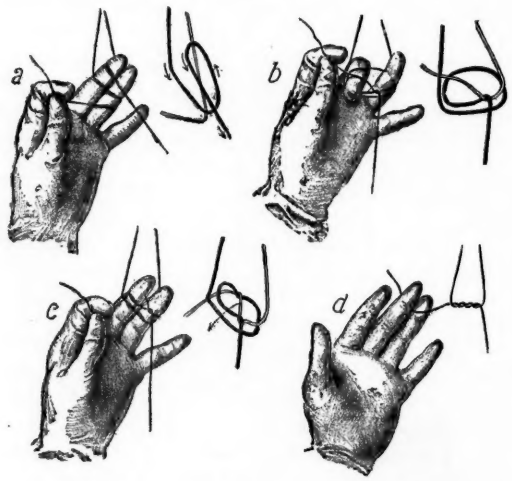


Figure 1 *a.* After grasping free end of ligature in the left hand wrap free end around middle and ring finger twice.
b. Insert middle finger under short loop. Grasp short loop between middle finger and ring finger.
c. Pull short loop through.
d. After pulling through, turn the hand over *so that the dorsal surface is up.* Change short end from between middle and ring finger to middle finger and thumb.

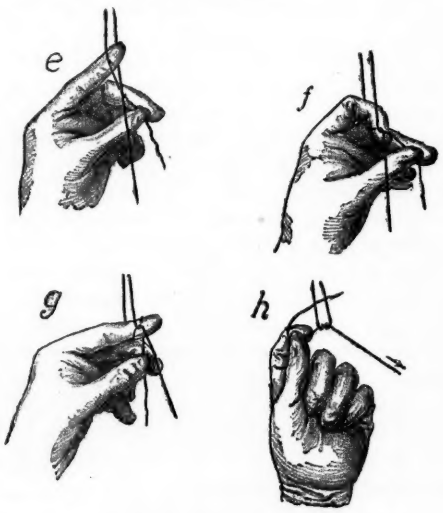


Figure 2 *e.* Insert index finger between the two loops. Index finger over long thread.
f Insert index finger under short loop.
g. Pull short loop through the two strands of catgut by using the dorsal surface of the index finger.
h. Grasp short end between index finger and thumb and complete knot.

The salient objection to the older method of tying the one handed knot is that after the first half of the knot is tied too much traction on the ligature or suture must be exerted to keep it from slipping until the next half is completed and the knot is locked.

The modification of wrapping the free end around the middle and ring figer twice will give a surgeon's knot, which will overcome the aforesaid objections.

The second half locks the first and completes a safe knot, easy to tie. I have used it for the past three years and find it very satisfactory.

ELEPHANTIASIS VULVAE: REPORT OF A SPORADIC CASE

HENRY H. RITTER, M.D., F.A.C.S.
Assistant Professor of Surgery,
and PAUL KLEMPERER,
Assistant Professor of Pathology,
N. Y. Post-Graduate Medical School and Hospital
NEW YORK

Elephantiasis vulvae is a rather uncommon condition in this climate. The endemic type, which is common in the tropics and subtropics, is extremely rare in this part of the globe, while the sporadic type is only occasionally seen. The following typical case came under the care of one of us and was operated upon by him at the N. Y. Post-Graduate Hospital:

Mrs. R. W., white, 42, housewife, referred to Dr. Lakowitz; was born in Hungary and came to the United States 25 years ago. Since then she has always resided in New York City. The family history is negative. The previous history, except for the fact that she was operated upon six years ago for a large umbilical hernia, is also negative. Menstruation began when she was seventeen years old, was always regular, of the twenty-eight-day type and of eight days' duration. She has had six children, all normal births, the oldest now twenty-two years old and the youngest thirteen. No history of miscarriages, syphilis, tuberculosis, or any other infectious disease.

Present History: About a year previous to consulting me (H. R.) she noticed that the left labium majus was enlarged. This enlargement has increased very rapidly, until now it extends well below the knee. She has had no general symptoms. This swelling causes much discomfort, and interferes with walking and sexual relations. The skin over the mass is always moist and there is a rather free flow of cloudy fluid from two small openings at the lower end of the labium. The odor, always present in spite of much washing of the part, is very offensive and has become very objectionable to the patient, her friends, and her family. In spite of all medical treatment the condition is not ameliorated, so the patient sought surgical relief.

Physical Examination: She is about five feet, six inches tall, weighing more than 300 pounds. There is a large transverse scar on the abdomen. There is a third degree laceration of the perineum, and a stellate laceration of the cervix uteri. The left labium majus is extremely large, reaching to two inches below the knee. The skin folds are exaggerated, so that the pedicle from which this mass hangs extends from two inches above the anterior superior spine down to the middle of the thigh. There is a dermatitis about the mass, and especially in the skin folds. The skin covering this tumor is thick, horny, nodular, sclerotic and moist. Two small openings are present in the lower end of the labium, each about the size of a pinhead, from which there is a steady flow of cloudy fluid. The odor about the part is very offensive. Urinalysis and blood count normal; Wassermann reaction negative; examination for filaria negative.

The patient was kept in bed in the hospital for one week prior to operation. During this time the parts were scrubbed with tincture of green soap and water three times daily and a hot antiseptic vaginal douche was given after each washing. The inflamed skin folds were dusted with zinc stearate powder.

Operation was attempted under local anesthesia, but due to our inability to introduce a needle through the sclerotic skin and into the mass, the attempt was abandoned, and under general narcosis the labium was amputated. An incision eighteen inches long was made, extending from the anterior superior spine down to the lower third of the thigh. Many large venous sinuses and dilated lymph spaces were encountered. In the center of the mass was an extremely firm stalk which was cartilaginous in consistency. With great difficulty this stalk was cut through and the mass removed. After attending to hemostasis, the wound was closed with interrupted sutures, using chromic catgut in the subcutaneous tissues and silkworm gut in the skin. A large cigarette drain was introduced.

After operation, on account of the excessive drainage, it was necessary to dress the wound every hour; after the fourth day the dressings were done every three hours; and after the eighth day, three times a day. As the discharge lessened the dressings became more infrequent. On the third day the drain was removed. The wound healed by primary union except at the inner angle where, over an area about the size of a quarter, it healed by secondary intention.

The patient has made an uneventful recovery.

The labium removed weighed eleven and a half pounds. It was thirteen inches long and eight and a half inches wide.

Pathological Reports The specimen is an oval-shaped mass measuring 360x240x100 m.m. It weighs 3700 grams. On the surface it is covered by skin which is smooth. The corium is markedly thickened, white and the subcutaneous fat tissue shows wide strands of white fibrous tissue. Attached to the base there are two large nodules which on section appear yellowish-brown with white strands. They resemble, in their form and structure, enlarged lymph glands. Sections from the surface show a thick layer of stratified squamous epithelium with slight exfoliation of horny lamellae on the surface and a moderately thick zona granulosa. The epithelial pegs are elongated. The epithelial layer is sharply demarkated from the underlying stroma. The corium is markedly thickened. It is composed of interlacing bundles of connective tissue fiber diffusely infiltrated with small lymphocytes and occasional polymorphonuclear leucocytes. The stroma shows a considerable number of newly-formed blood capillaries and occasionally dilated lymph spaces lined by flat endothelial cells and filled with a homogeneous pinkish mass. In the deeper areas of the corium there are numerous foci around small bloodvessels composed of lymphocytes, plasma cells and polymorphonuclear leucocytes. Within these foci there is a considerable amount of old blood pigment, partly free between the cells and partly stored up in mononuclear wandering cells. The subcutaneous fat tissue is markedly fibrous, the fibrous areas composed of coarse connective tissue bundles with numerous spindle-shaped cells which contain old blood pigment. Occasionally groups of sweat glands and excretory ducts can be found.

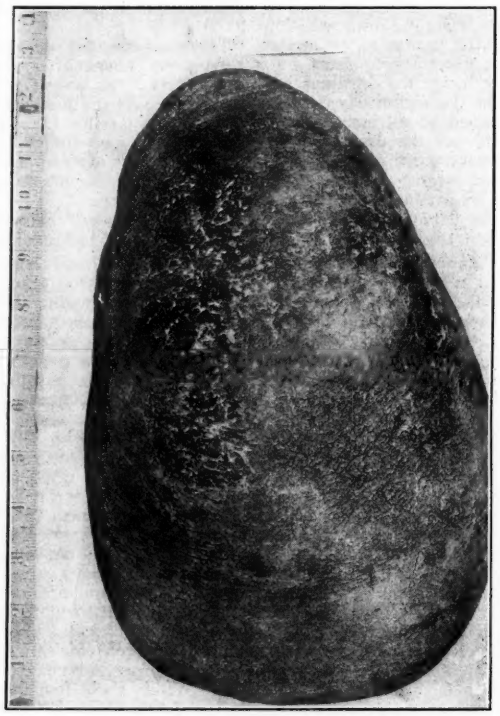
Sections from the deeper areas of the fat tissue show the same diffuse proliferation of connective tissue with a considerable number of newly-formed capillaries.

The lymph gland shows an excessive thickening of the reticulum. There are only a few small lymph follicles recognizable at the periphery. The trabeculae extending toward the center are thickened. Almost the entire lymph gland is formed by interlacing bundles of connective tissue fibers, among which numerous fibroblasts and lymphocytes can be recognized. Embedded in this tissue are numerous small bloodvessels. The same picture prevails in a second lymph gland examined. Here in the adjacent connective tissue dilated large lymph vessels are found.

The histological picture shows an enormous hypertrophy of the corium and particularly the subcutaneous tissue of the labium. The hypertrophy is due to proliferation of connective tissue. Infiltration with lymphocytes and poly-

nuclear leucocytes, indicating a prolonged inflammatory reaction, is conspicuous. The proliferation of the connective tissue is diffuse and there is no suggestion of a tumor-like growth. The same process of fibrosis is present in the lymph glands. Diagnosis: diffuse fibromatosis (elephantiasis).

Elephantiasis is characterized by a marked disproportion of the affected parts. The skin is thickened and undergoes scaly, hard, nodular changes, and takes on the appearance of the skin of an elephant. The odor about the involved parts is foul. The parts are usually moist, due to the exudation of lymph through the skin from the enlarged and distended lymph spaces.



Elephantiasis of labium majus.

The cause of the endemic type is, usually, obstruction of the lymph channels by the filaria sanguinis hominis. The sporadic type is non-parasitic in origin and, according to Ravogli[1], is due, in the majority of cases, to syphilis or tuberculosis. He further states that in all his cases of elephantiasis of the genitals the disease has been the result of extensive ulcerative processes of a tertiary syphilitic nature. The condition is more common in the negress. It occurs at all ages, but is more frequent in adults. According to Bullard[2], the growth may be very slow and insidious, or very rapid, so that within a year it may assume enormous proportions. Any inflammatory condition of the lymph channels may be a causative factor.

Ravogli states that typical elephantiasis of the endemic type, due to filarial infection, is ushered in by a rise of temperature, nausea, sometimes vomiting, pain in the groin or labia, chyluria and congestion of the labia. Later the thickened skin breaks and lymphoid fluid exudes, and there is usually an offensive odor.

The sporadic type is not accompanied by any general symptoms. The complaint is localized to the affected part. In this type, according to Osler[3], "severe neuralgic pain may attend the enlargement of the part, but in the later stages a certain degree of anesthesia results from the obstruction of the nerve trunks and endings". The deformity causes great annoyance. There is difficulty in walking and the great bulk of the affected labium renders the patient more or less helpless. Sexual function is interfered with or prevented. With the development of fissures and the increased flow of lymph through the skin, the offensiveness of the odor is exaggerated, and the patient appears depressed and melancholic, seeking to hide from society. The rapidly growing type of elephantiasis is sometimes mistaken for sarcoma.

Medical treatment has been found to be of no avail, even in those cases due to syphilis. Although syphilitic ulcers yield to treatment, the size of the growth diminishes very little, if at all, so that all observers agree that surgical removal of the entire vulva is essential in all forms of elephantiasis. Before amputation of the vulva is attempted, all efforts should be made to render the affected parts surgically clean. Due to the large lymph spaces and the tremendously enlarged venous sinuses, danger from infection and absorption is magnified. Drainage of the wound is essential. In Bullard's case the patient died twelve hours after operation. Care must be exercised not to remove too much of the healthy skin, or a defect will be present that is difficult to close.

Summary: The causative factor for the lymph obstruction, and the resultant elephantiasis, in the case here reported, could not be ascertained. Our suspicion, however, is that vaginitis may have been the producing factor.

REFERENCES

1. Ravogli, A.: *Jour. Cut. Dis.*, January, 1919.
2. Bullard, W. Duff: *Medical Record*, January 28, 1899.
3. Osler: Modern Medicine, Vol. iv.

FRACTURES OF THE SHAFT OF THE FEMUR

No man who is not competent and equipped to apply traction (Buck's or Thomas or Pierson) or skeletal traction—and to apply it right, and to see that it stays right, has any business talking about plates and grafts.—FRED J. COTTON in *The Journal of the Iowa State Medical Society.*

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WALTER M. BRICKNER, B.S., M.D., F.A.C.S., *Editor*
New York City

ELMIRA, NEW YORK, JANUARY, 1925

THE TEMPERATURE OF OPERATING ROOMS AND THE PROTECTION OF THE PATIENT.

The visitor to many of our operating rooms will often be struck, we would think, with the insufficient protection from chilling of the patient's body. All too often it is laid, more or less naked, upon the operating table with nothing beneath it but a cold sheet over a thin pad, and nothing over it but a blanket (usually thin) above and below the field of operation and the sterile draperies. A robust patient will probably suffer no great ill-effect from this if the operation is not prolonged; but certainly for small children and for patients debilitated or in shock this covering is far from sufficient. Heating devices, (electric pads and water pans) have not come into general use, probably because they are unsatisfactory and perhaps also because of the possibility of producing a burn. Without these the patient may be kept sufficiently warm, however, by placing under him a folded blanket (preferably over a pad sufficiently thick and soft to obviate afterbackaches), and by covering as much of the body as is practicable with thick blankets. Infants, and patients in shock should be *wrapped*, as much as is expedient, in *warm* blankets.

Intended to protect the patient, the also bad practice is not uncommonly observed of overheating the operating room to an uncomfortable, often to an almost unbearable, degree. It does not seem desirable that the patient should breathe hot—and as is then often the case—stale air; nor can it be to the interest of the patient for his surgeons and nurses to fret and sweat in an uncomfortable atmosphere. As Emmet Rixford points out in *California and Western Medicine*, December, 1924, radiation of heat from exposed viscera can not be avoided by warming the air to less than body temperature, which, of course, would be well-night insufferable. He believes that an operating room temperature of 70° or even 65° is better than the uncomfortable 80° so commonly adopted. He states that "nothing more surely produces shock than overheating" and further: "In many hospitals the service rooms are in direct connection with the operating-rooms, and clouds of steam from sterilizers pour in, raising the humidity to a distressing degree. Moreover, stale, second-hand, foul air, so often found in operating-rooms, makes for mental obtundity on the part of the surgeon and exhaustion on the part of all, including the patient."

Lobingier, Terry, Lockwood, A. J. Ochsner and Judd, participating with Rixford in the discussion of this subject, agree with him concerning the desirability of fresh air at a comfortable temperature in the operating room and would place the optimum temperature at 72° to 76°.

The steamy, uncomfortably hot operating room bespeaks bad planning or bad management. In the building of hospitals one cannot take too much pains in planning the operating room suite and, since window ventilation presents obvious disadvantages, in arranging for adequate easily controllable ventilating and heating systems.

HENRY GRAY, ANATOMIST

Thumbing the pages of the new (twenty-first) edition of Gray's Anatomy* revives slumbering memories of the dissecting-room and the student's "quiz" and kindles afresh one's admiration of the original author—the brilliant English anatomist who published this treatise in 1858 at the age of thirty-three and survived it in the flesh only three years. Since then his work has been reverently edited and enlarged by many English and American anatomists. One of the best of these editions was the American of 1913, adapted to the Basle nomenclature (B. N. A.) by Prof. Edward Anthony Spitzka of Philadelphia who, like Gray, died young and but a few years after his work appeared. Throughout all the expansions and mutations that this treatise has gone

*Anatomy of the Human Body. By HENRY GRAY, F.R.S., Fellow of the Royal College of Surgeons; Lecturer on Anatomy at St. George's Hospital Medical School, London. *Twenty-First Edition.* Thoroughly Revised and Re-edited by WARREN H. LEWIS, B.S., M.D., Professor of Physiological Anatomy, Johns Hopkins University, Baltimore, Md.; Research Associate, Carnegie Institution of Washington. Large octavo; 1417 pages; 1283 engravings. Philadelphia and New York: LEA & FEBIGER, 1924.

it remains distinctively Gray's Anatomy—in many of its incomparable illustrations and in a vast amount of its precise descriptive matter. And these have been preserved, not as a matter of sentiment, but because they could not be improved upon. Dog-eared by thousands of English and American medical students during the past sixty-five years, "Gray" will probably teach generations yet to come!

ANNALS OF SURGERY

THE AMERICAN JOURNAL OF SURGERY, very soon to reach its twentieth anniversary, extends felicitations to *Annals of Surgery*, which has just attained its fortieth. To mark the event this month's *Annals* will be a "festschrift"—a large, commemorative issue, to which prominent surgeons have been invited to contribute and which, we have heard, will occupy more than 350 pages. The *Annals* has earned no less by its splendid service than by its age the right to celebrate. For many years it was the repository of the best surgical articles in English; and now, when it shares this field with other periodicals, American and British, it yields to none of them in the dignity and importance of the surgical contributions it publishes.

The "festschrift" will, however, commemorate not merely forty years of publication, but also forty years of editorship by one man—the distinguished surgeon and author, Lewis Stephen Pilcher of Brooklyn. He is himself celebrating twice forty years by the publication of his reminiscences, "A Surgical Pilgrim's Progress." (J. B. Lippincott Co.), in which he looks back upon a long life of scholarly and scientific effort and achievement. Veteran of the Civil War and of the navy, Commander-in-Chief of the Grand Army of the Republic, accomplished surgeon and teacher, medical bibliophile, scholar and editorial Nestor, the JOURNAL, too, pays homage to him and wishes him many more years of mental and physical vigor in which to continue to guide the destiny of *Annals of Surgery*.

Progress in Surgery

Selections from Recent Literature

Report of Six Cases of Blastomycosis. JAMES F. COUPAL, Washington, D. C. *International Clinics*, Vol. IV, December, 1924.

Six cases are reported to illustrate the possibility of mistaking miliary blastomycosis for tuberculosis and that this infection can produce those lesions which we label chronic inflammatory, which both clinically and histologically closely simulate tuberculosis. The first three cases cited ran clinical courses which simulated acute general miliary tuberculosis, which they at gross examination at autopsy seemed to be, and only careful histological examination and culture revealed them to be blastomycosis. Probably greater instance of this infection would be found in cases thought to be tuberculosis if too much reliance were not put upon gross diagnosis and too little attention paid to the histological and bacteriological proving up of all of our gross labels. Probably many cases of indolent wounds which fail to clear up under the usual methods of treatment and which are not syphilitic, will be found to show blastomycotic contamination with low-grade infection, which has failed to break down the local barriers and produce any general reaction. This infection can simulate tuberculosis not only in the miliary form, but in the glandular type and may go unrecognized unless it produces those surface abscesses from which a culture may be recovered. Caseous necrosis of lymph-nodes in chains or locally, due to this organism, which histologically are very faithful copies of a tuberculous process, can occur. The differential diagnosis of this condition must include syphilis, tuberculosis, yaws, leprosy, Hodgkin's disease, and any of those conditions which can produce a chronic inflammatory reaction.

Coupal concludes :

(1) Clinically this infection, even though it may be widespread in the form of a general miliary one, does not seem to elevate the temperature higher than 102° F., but is prone to produce a rapid heart-rate.

(2) The tissue reaction very closely resembles that of tuberculosis except that the tubercle breaks down faster, necrosis occupies a larger proportion of it and the cellular reaction contains more fibroblasts and less large and small mononuclears than the one produced by B. tuberculosis.

(3) Although the tubercle caseates faster it apparently extends slower than in the case of tuberculosis and of two tubercles of the same size, the former will contain several giant cells usually of the basophilic staining reaction where the latter only contains one centralized giant cell with a distinct eosinophilic stain.

(4) It is not impossible for the blastomyces to infect a tuberculous lesion, which opens onto the surface of the body or into body cavities and to have both the clinical and histological picture obscured by this accident, which was the probable sequence in case III.

(5) In all probability the unfortunate accidents of spread and dissemination are more important factors in determining the outcome of blastomycosis than of tuberculosis.

(6) The difficulty in cultivating the organism, its rare occurrence and its clinical and pathological resemblance to tuberculosis tend to lessen the chance of its being discovered.

(7) The systemic cases show a high mortality.

The Treatment of Staphylococcus and Streptococcus Meningitis by Continuous Drainage of the Cisterna Magna. WALTER E. DANDY, Baltimore. *Surgery, Gynecology and Obstetrics*, December, 1924.

Early continuous drainage of the cisterna magna is advocated for the treatment of meningitis in which the infecting organism is staphylococcus and streptococcus. Three of 4 cases so treated survived; 1 case of streptococcus viridans, 1 of streptococcus hemolyticus, and 1 of staphylococcus aureus. In the unsuccessful case the organism was streptococcus hemolyticus. This method is not urged in other forms of meningitis because it is felt, though not proven, that the character of the inflammatory exudate would probably make drainage impossible.

Treatment of Malignant Tumors of the Jaw. (*Traitement des tumeurs malignes des machoires.*) PROF. LEMARTIE. Paris. *Le Progres Médical*, November 15, 1924.

Lemaitre dismisses with bare mention the chemical and serological methods of treating tumors of either jaw. He considers as satisfactory only the surgical procedure. The typical operation for resection either of the upper or lower maxilla is considered unsatisfactory because it takes no account of the extent or situation of the lesion. Lemaitre prefers an atypical operation in which the only consideration is the site and extent of the malignant tumor. The defect is replaced by some sort of prosthetic appliance and further treatment is undertaken with the *x*-ray or radium or both. In the use of radiotherapy, intensive doses are to be employed, since small doses may exert a stimulating effect on the tumor. Radiotherapy is to be used both before and after operation. In several characteristic types of jaw-tumor, the author outlines the therapeutic procedures.

The Nature of Intestinal Obstruction, With Deductions for Treatment. STERLING BUNNELL, San Francisco. *International Clinics*, Vol. IV, December, 1924.

Bunnell discusses toxin-production and other phenomena in intestinal obstruction and presents certain guiding principles in treatment.

Advantage should be taken in the necessary interval between diagnosis and operation to wash out the stomach and to replenish, with salt solution intravenously, the fluid and chlorides lost by vomiting. If lavage is not done, pneumonic infection of the lungs or even drowning may occur from vomiting under anesthesia.

Local anesthesia if possible, otherwise nitrous oxid and oxygen is advisable, though in some cases ether may be necessary for relaxation. Transfusion of blood is a necessity in all severe cases.

Following up the collapsed gut to the obstruction causes less paralysis than following down the dilated coils or allowing them to extrude from the wound and so to overdilate. Direction of fecal flow is determined by sliding a finger to the base of the mesentery. The top surface followed to the right leads in the direction of the flow. Orientation is helped by remembering that upwards the gut is larger, thicker walled and of thinner mesentery, with translucent spaces in it.

The aim at operation is to stop the absorption and formation of toxin, to relieve distention and to establish fecal flow; to remove a segment of gut if necrotic and to reduce the infection if a local or general peritonitis be paralyzing the gut. By clamping off and removing a necrotic loop, flooding the circulation with toxin of the contents and of the intestinal wall is prevented. By draining the gut above an obstacle the contents are largely removed and distention is relieved. By removing the obstruction the formation of toxin is terminated, providing that meteorism does not remain. All of these can be accomplished in obstruction of twenty-four hours' standing, but, depending on the condition of the patient and good judgment, enterostomy only may be done.

Enterostomy will reduce the mortality to one-half or one-third. It is often necessary in the first twenty-four hours if there is but little distention. It should never be omitted in well-established obstruction with great distention.

Meteorism is a formidable cause of death in obstruction and should be relieved. It not only stretches the muscles, but the intestinal walls become ischemic and hence necrotic. It is also accompanied by shock. An over-stretched intestine, even though in a short segment, constitutes a physiological obstruction. The author has often seen how a puncture will collapse but one loop at a time. Thus, in meteorism there may be thirty or more "closed loops," each secreting toxin.

The use of a long perforated rubber tube inserted rectally while the abdomen is open is of advantage in obstruction from kinks of sigmoid.

In volvulus of the sigmoid excision gives the best results, even if it can be untwisted and the gut is in good condition, as recurrence is the rule.

In intussusception in infants excision with anastomosis will kill. By introducing water into the rectum the intussusception can usually be easily reduced with moderate manipulations under the eye with the abdomen open. Failing in this, excision, with both ends left out through the skin, gives the only chance.

In peritonitis there is a combination of toxemia from infection and from paralytic obstruction. A jejunostomy may be of some benefit, especially if the peritonitis is not generalized.

Postoperative surgery for obstruction must be more prompt than for obstruction in general. After the first twenty-four hours, usually enterostomy alone must suffice.

Acute Intestinal Obstruction—A Plea for Early Diagnosis and Operation With Report of Cases. LEE SHU FAN, Canton. *The National Medical Journal of China*, October, 1924.

1. Time is fleeting and is against you. Whenever possible, send the case to hospital and watch for a few hours. Take no chances. Try to diagnose within twelve hours.

2. If there is vomiting more than once, with great pain in the abdomen, which is in itself flaccid, and there is absolute constipation for forty-eight hours—operate.

3. If a tumor is palpated, or if visible peristalsis is present, or if blood is passed through the rectum and vomiting is incessant, the diagnosis should be made earlier.

4. In all doubtful cases of the "acute abdomen", never prescribe morphia or purgatives; suspend food and drugs by mouth. Water, however, may be permitted.

5. It is extremely desirable to form a preoperative diagnosis in regard to the nature and site of obstruction, even though tentative.

6. Intraspinal anesthesia is the anesthetic of choice, especially in early cases.

7. During operation, every means must be employed not to increase shock. Avoid rough handling. Traction on the mesentery produces shock and evisceration sufficiently long is fatal *per se*.

8. In view of the recent work done by investigators on the continual elaboration of toxin in the duodenum, it seems justifiable and beneficial to do a jejunostomy in late cases, although this requires further confirmation.

9. It is essential to replace the lost fluids preferably by rectal drips of glucose and sodium bicarbonate solution.

10. There is no medical treatment of this condition.

End-Results in Resection of Gastric Carcinomata. (*Dauererfolge bei der resektion des magenkarzinoms.*) HANS FINSTERER, Vienna. *Wiener Klinische Wochenschrift*, November 4 and 13, 1924.

An unfortunate impression has gained foothold among most of the physicians and a great majority of the surgeons that gastric carcinoma has necessarily a fatal prognosis and consequently many have disadvised operation. Stimulated by the report from the Eiselsberg clinic in which Schönbauer reported 27% of radical cures, Finsterer undertook to follow up his cases of gastric resection for carcinoma. When it is considered that the prognosis in unoperated cases is 100% mortality, he claims a great deal of encouragement may be derived from an adequate analysis of his report. His report consists of a study of 225 gastric resections performed since 1910. In considering the operability of gastric carcinoma, Finsterer divides his cases into three main groups: in the first group he places gastric carcinoma localized to the stomach with or without metastasis to the neighboring lymph glands; in the second group are those cases in which there are already adhesions to the pancreas, which may be carcinomatous or inflammatory, and cases with metastasis in the liver; in the third group are the advanced cases with large metastatic nodules in the liver, peritoneum and pancreas. In this third group only palliative operation with removal of as much of the tumor as is possible as a preliminary to intensive radiotherapy is advocated.

In the first two groups the end-results will depend to a certain extent on the type of operation used. Finsterer prefers a wide resection, if necessary, including parts of the liver and pancreas with complete removal of the glands about the head of the pancreas and the iliac axis. In all cases a complete resection of the large omentum is to be practised. Finsterer also prefers to make a side-to-end anastomosis as is described in the modified Billroth II operation. The operation is performed mainly under local anesthesia. It is largely to the choice of anesthesia that Finsterer lays the relatively low operative mortality figures. In group one the immediate mortality is only 6.9%; in group two with extensive resections, of 81 cases, 30 died—an operative mortality of 37%; while in the third or palliative group it was 33%; or, taken together, a combined mortality rate of 19.5%.

Of the 154 cases operated upon between 1910-1921, 41 cases (26.6%) remained completely cured for 3 years. If from this list the immediate mortality is subtracted the percentage of 3 year-cures is raised to 40%. Among these are 7 cases belonging to the first group with a 3-year cure of 46%, and 75 cases belonging to the second group with a 3-year cure of 34.7%.

Examined after a five-year period, there were in all 124 cases of resection with 21% of cures. Among these were 14 cases (24.5%) cured in the first group and 12 cases (18%) cured in the second group. On the basis of these figures Finsterer makes a plea for operation as soon as symptoms appear, and in cases where only suspicion exists he urgently advises and emphasizes by case reports the urgent necessity for exploratory laparotomy.

Splenic Anemia: Report of a Case in a Late Stage Cured by Splenectomy. EDMUND HORGAN, WILLIAM P. REEVES and WILLIAM EARL CLARK, Washington, D. C. *The American Journal of the Medical Sciences*, December, 1924.

When a patient has a gastro-intestinal hemorrhage with epigastric pain, the spleen and blood should be studied. The case reported demonstrates that a patient in a late stage of splenic anemia may be successfully splenectomized if he has had proper preparation by medcal transfusion.

Splenectomy should not be done in splenic anemia without considering the risk due to secondary anemia and damage to the liver and other tissues. The recovery of this case helps to strengthen the view that whatever the cause of splenic anemia may be, it is primarily in the spleen.

The Early Diagnosis of True Hernia of the Diaphragm. DONALD P. ABBOTT, Chicago. *The Journal of the A. M. A.*, December 13, 1924.

Abbott says that true hernias of the diaphragm, especially peri-esophageal, are much more common than is generally supposed. They are not found in the early stage because, owing to the fact that the sac is very small, the subjective symptoms are often slight. For the same reason, objectively, there are no findings on employing inspection, palpation, percussion and auscultation. The most important means of examination is fluoroscopic. Routine examination of the patient with the fluoroscope will reveal small periesophageal diaphragmatic hernias, which will otherwise be missed.

Twenty Cases of Resection of the Ascending Colon for Cecal Stasis. (*Vingti cas de resection du colon droit pour stase caecale.*) E. DESMARKT and O. MERCIER, Paris. *La Presse Médicale*, November 22, 1924.

The authors define their conception of the syndrome of ileo-cecal stasis. The essential elements are a tender area over the inner border of the cecum with more or less diffuse tenderness over the whole ascending colon, acute colicky attacks associated with nausea and vomiting but seldom or never with an elevation of temperature or a real spasm and rigidity of the muscles. Constipation is almost always part of the picture and there is usually a marked residue in the colon after 30 hours as shown by the roentgenogram. Pathologically, the condition is characterized by loss of tone in the colonic musculature or by the presence of fibrous bands which are usually congenital in origin.

Medical treatment should first be given a thorough trial and only complete failure should lead to surgical intervention. In the opinion of the authors, the routine appendicectomy is completely valueless and even associated with freeing the fibrous adhesions it may prove unavailing. With colopexy they have had no experience, though this operation has been recommended. The procedure of choice is a resection of the ileo-cecal junction and if need be of the whole of the ascending colon. The operation is performed under gas-oxygen anesthesia. End-to-end anastomosis is the only satisfactory procedure to be followed. They report 20 cases of which only 13 enter into their analysis as having been cured with complete loss of symptoms for a period of time varying from 2 to 6 years.

The Cause and Prevention of Postoperative Gas Pains. CHARLES D. O'KEEFE, St. Louis, Mo. *American Journal of Obstetrics and Gynecology*, December, 1924.

O'Keefe offers the following conclusions:

Regular diet may be given to within twelve hours of the operation. Purgation is not only unnecessary but harmful.

Avoidable trauma to the abdominal contents during operation is too often the cause of postoperative gas pains.

The ether effect may be alleviated by the preoperative use of morphia and hyoscin hydrobromide and the postanesthetic gastric lavage.

Peristaltic action should be stimulated immediately following operation; intermittent injections of saline solution or water being the method of choice. Drugs should be discouraged.

Postoperative nutrient rectal feeding predisposes to gas pains. The disadvantages of the Murphy drip proctoclysis outstrip the advantages.

Morphia should not be denied whenever the patient's discomfort demands it. Pain, restlessness, sleeplessness and fear play an important part in the stasis of the gastrointestinal tract.

Extravesical Inguinal Prostatectomy. (*Inguinale extravesicale Prostatektomie*). OTTO MAJER. Innsbruck. *Archiv für Klinische Chirurgie*, October 30 1924.

Because of the various objections that have been made against the present procedures in the treatment of hypertrophied prostate Maier suggests the following: First the performance of a bilateral partial vasectomy. This preliminary operation combined with a permanent drainage and irrigation through a catheter is sufficient in certain cases to relieve the patient of all symptoms, even including that of residual urine. In those cases the more dangerous prostatectomy is entirely avoided. In the cases that are not benefited, the performance of the vasectomy prevents the development of an epididymitis. In these latter cases the author suggests a new procedure for removing the prostate. An incision is made in the inguinal region and the prostate subperitoneally approached by keeping close to the anterior abdominal wall. At the neck of the bladder the lateral lobe of the prostate covered by the pubo-prostatic plexus of veins is seen. These veins are carefully doubly ligated and cut. Following this the capsule of the prostate is incised and the hypertrophied nodules are bluntly dissected away by the finger. The capsule is then carefully sewed, a drainage tube is inserted to the capsular suture and the wound is closed in layers. A permanent catheter is inserted into the bladder through the urethra. No account is given of postoperative results.

Heliotherapy in the Treatment of Genito-Urinary Tuberculosis. NELSON A. MYLL, Denver, Colo. *The Journal of the A. M. A.*, December 6, 1924.

Genito-urinary tuberculosis, like bone, joint, and other complications of general tuberculosis, is a local manifestation of generalized tuberculosis, and treatment, to be curative and permanent, must be directed toward the disease rather than to a local manifestation of the disease. The removal of an epididymis or of a testis, or the draining of a tuberculous prostate cannot, in itself, be curative, even if the local pathologic condition has not all been eradicated. Heliotherapy is the method of treatment carried out in cases of genito-urinary tuberculosis at the hospital with which Myll is connected. Heliotherapy is begun at once, according to the Rollier method. The feet and ankles are exposed to the direct sunlight for ten minutes the first day, five minutes anteriorly and five minutes posteriorly. The second day the exposure is increased five minutes both anteriorly and posteriorly half way up to the knees, thus giving a total of twenty minutes' exposure and so on, approximately an equal distance of surface except the head is sunned. The ten minute increase is continued until about two hours' radiation is taken in the summer and three hours in the winter. The total time will vary somewhat with the individual. Particular attention must be paid to exposing the genitals, and the site of active inflammation must receive direct radiation. The patient wears no clothes while taking the sun. When not sunning, the patient is encouraged to wear as little clothing as possible, to give him the maximum benefit of air baths. If several sunless days occur together, artificial light therapy is substituted. Rest, the one great therapeutic agency, which is of greatest value in the treatment of tuber-

culosis, is almost ideally procured in this treatment. These patients are in bed practically all the time, and physical relaxation is almost constant. The diet is the regular hospital diet. Since last November Myll has been using, as a routine, the intravenous administration of calcium chlorid, 5 c.c. of a 5 per cent aqueous solution every five days. In all cases in which there was bladder irritation, there was an almost immediate symptomatic improvement. Painful urination was greatly lessened or ceased entirely, probably through the action of calcium chlorid in relaxing the smooth muscle spasm. The only local treatment employed is removal of free pus in cases in which the lesion is superficial and easily accessible. Fourteen cases have been treated with heliotherapy; and the results have been uniformly encouraging. In no case has there been an extension of demonstrable disease after treatment has been begun, and in every case except one, this patient being a full blooded Indian, there has been a steady clinical and sypmtomatic improvement after the initial symptomatic aggravation during the first few weeks of treatment. Heliotherapy arrests the progress of pathologic change and seems to promise cure of tuberculosis of the genito-urinary tract.

The Treatment of Tetanus, With Special Reference to the Use of Magnesium Sulphate. CARROLL SMITH and W. E. LEIGHTON. St. Louis. Mo. *The American Journal of the Medical Sciences,* December, 1924.

The authors report 8 consecutive cases of tetanus. Treatment should be carried out as follows:

1. Prophylactic antitoxin, subcutaneously in all suspicious wounds, repeated again after ten days, especially if suppuration is present, or if an operation is to be performed.

2. Antitetanic serum should be given during an attack of tetanus. Intravenous administration may be satisfactory. Intraspinal serum should be employed in severe cases or where improvement is not satisfactory.

3. Spasms should be controlled by the subcutaneous injection of magnesium sulphate. In urgent symptoms or when the subcutaneous method fails intraspinal or even the intravenous route should be employed. Morphin sulphate, in addition to magnesium sulphate, may aid at times. Careful personal observation is necessary in order to judge the dosage and method of administration of magnesium sulphate.

4. The wound of infection should be opened and cleaned, and aid should be allowed to reach it. Tincture of iodine should be used locally. Serum should be injected at the site of the wound to block the progress of the toxin.

5. An intramuscular or subcutaneous injection of serum should be given on the eighth or ninth day after the beginning of the treatment, in order to keep up the prophylaxis.

Blood Chemistry Study in Osteogenesis Imperfecta—Preliminary Report. ALBERT E. FLAGSTAD, ELIZABETH ZANGER and LOGAN LEVEN, St. Paul. *Minnesota Medicine,* December, 1924.

In this series were two male and two female cases. Two patients were observed to have characteristic sclera and parietal bosses. Heredity plays a role in the series; brother and sister affected.

All fractures were of the green-stick variety, and proximal portions were most often affected. Union as a rule was good. There is comparatively very little pain associated with fracture.

Blood chemistry study reveals normal calcium and phosphorus values; sugar, total non-protein nitrogen, urea, nitrogen, creatinine and uric acid within normal limits.

Bone meal in diet caused no variation in blood values. The treatment of this condition consisted in the use of sun and Alpine light, supports when needed, and the prevention and correction of deformities.

The Reduction and Control of Unmanageable Fractures by Means of a Metal Pry Pin. J. S. WELCH, Lincoln, Nebr. *Surgery, Gynecology and Obstetrics,* December, 1924.

A small blunt steel pin is used as a lever between fragments. One bone end serves as the fulcrum to pry the other into apposition. The pry pin is guided or directed into position and correct appostion of fragments is judged by aid of the fluoroscope. Ordinary surgical asepsis is practiced, and since the skin opening is reduced to a single puncture wound, the risk is practically nil.

Ten days to 2 weeks will suffice in most cases to develop callus sufficient to retain reduced fragments held in a satisfactory cast. Then by simple extraction of the pry pin all further risk from buried mechanical retention devices, ends. In many cases the pry pin can be withdrawn at once if the fragment ends are so irregular as to retain their reduced position.

The character of pin varies with the thickness of the extremity, size of bone, and strength of muscles. It should be rigid, but with bending properties, rather than breaking, when extreme force is applied. Special irregularities of its surfaces where contact with ends of bony fragments is made, may assist in retaining approximation. (Ordinary threads cut on a tapering long shafted screw may be of assistance.)

The time limit of safety to work under the fluoroscopic *x*-ray is short, and during the surgeon's enthusiastic wrestle with unwieldly fragments he must not forget this danger.

Treatment of Acute Osteomyelitis in the Stage of Subperiosteal Abscess, etc. (*Zur Behandlung der akuten osteomyelitis in Stadium des subperiostalen Abscess,* U. S. W.) OTTO MAIER, Innsbruck. *Archiv für Klinische Chirurgie,* October 30, 1924.

In the severe septic types of osteomyelitis, the surgeon is helpless one way or the other. The disease either terminates fatally or goes on to chronic osteomyelitis. In the cases, however, where either the virulence of the organism or the resistance of the patient is such that a subperiosteal abscess is formed, the author advises the most conservative type of surgery. He looks upon the formation of a subperiosteal abscess as a sign that nature has succeeded in combating the spread of the infection, and he therefore advises nothing more than an incision of the periosteum and packing the wound. The healing process takes place from the periosteum and is best left undisturbed. In his case there was complete sequestration of about 8½ c.m. of the whole thickness of the tibia with complete regeneration under the above treatment in about 14 weeks.

The Use of Plaster in the Treatment of Fractured Femurs. W. M. FIROR, Baltimore. *Bulletin of the Johns Hopkins Hospital,* December, 1924.

For the patients in the Johns Hopkins Hospital for recent fractures of the shaft of the femur there have been five methods of treatment: (1) Buck's extension, (2) Overhead extension, (3) Open reduction, (4) Early immobilization in plaster, (5) Immediate immobilization in plaster.

The transition from one method to the other is described: the results obtained by the different methods are compared; and the average stay in the hospital of the patients treated by the various methods is tabulated.

1. Immediate immobilization in plaster of fractures of the shaft of the femur does not give satisfactory results in patients over 14 years of age. whereas in patients between 7 and 14 years the method gives good results; and in children under 7 years, this method gives results which are as good as those obtained by overhead traction.

2. By the use of the method described as early immobilization in plaster, i. e., after 3 weeks in Hodgen splint and Balkan frame, the period of residence in the hospital is greatly reduced.

Fractures of the Hip. MELVIN S. HENDERSON, Rochester, Minn. *Minnesota Medicine,* December, 1924.

While fractures of the hip do not give the high percentage of good results that other fractures do, they nevertheless respond well to treatment. They should be reduced and held in position until healing occurs, at least three months, with no weight bearing for at least six months. The abduction method, advocated by Whitman, has a sound basis. The teaching that non-union

is to be expected is in the discard. Careful examination checked up by measurements and *x*-ray examinations at the time of injury will prevent many mistakes. Re-examination clinically at frequent intervals, if *x*-rays are not made, will reveal the case in which the impaction breaks down. In case of non-union, the bone pegging operation, preferably using the fibula, is the most efficacious. When the neck of the femur is practically gone, the reconstruction operations of Brackett and Whitman should be considered. It should be remembered, however, that firm fibrous union in some instances is quite adequate for the demands of function in the declining years of life.

The Sacro-Iliac Joint: Its Diagnosis as Determined by the X-Ray. BYRON C. DARLING, New York. *Radiology,* December, 1924.

Backache has more to do with the soft tissue, ligaments, muscle fibers, bundles and sheaths, nerves and neuralgias, than dislocations of joints. Sprains, sacro-iliac and lumbo-sacral, seem more likely than demonstrable relaxations or subluxations.

The sacro-iliac joint has a synovial lining and is, therefore, subject to arthritis, due to any focus of infection.

Sacro-iliac strain, relaxation, subluxation or dislocation may exist clinically, but cannot be shown definitely by the *x*-ray examination if and when "the motion consists of a forward and backward tilting of the sacrum in relation to the ilium" (Goldthwait).

Where there is actual separation of the pelvic girdle, such as complete fracture with displacement or a complete separation at the symphysis, then only will there be shown by the *x*-ray a definite sacro-iliac separation or relaxation.

Radiographs made improperly are often misinterpreted as showing separations that do not exist. This is a too common error, due to zealous attempts to make or support a diagnosis. The weight of opinion among experienced roentgenologists is in the negative, and is almost unanimous.

Book Reviews

Human Constitution. A Consideration of its Relationship to Disease. By GEORGE DRAPER, M.D., Associate in Medicine at Columbia University, New York. Octavo; 345 pages; 208 illustrations; 105 tables. Philadelphia and London: W. B. SAUNDERS COMPANY, 1924.

For as long as man has endeavored to know himself, he has attempted to group his fellow men into certain categories suggested by peculiarities of the physical make-up. And as a consequence of the careful observation of earlier clinicians, we have segregated certain types, such as the acromegalic, the Froelich, the dwarf type and so on. In recent years, particularly on the European continent, the study of the human constitution, of the organism as a whole in its relation to its environment, in its predisposition to disease, has been undertaken with great assiduity. As a result, we now speak of "diatheses" and "facies." Doubtless, it might be postulated that the same factors which determined X's peculiar cast of countenance might possibly be at the root of his predisposition to ulcer formation, but the present state of our statistical information seems to be a trifle too incomplete to enable us to prognosticate with any assurance of success that such a gonal angle or such a manubrial length indicates the formation of gall-stones, or mayhap pernicious anemia. Dr. Draper, in the first of a series of monographs dealing quite simply with man, has unfortunately left his work open to such a cynical interpretation. In this "panel" man is considered from an anatomic point of view. Six or seven diseases, among them gall-bladder disease, arteriosclerosis, nephritis, etc., are studied from a biometric standpoint. The mass of statistical information gathered will doubtless prove of great value ultimately, but at present these data should be submitted as purely descriptive facts without the slightest suggestion of diagnostic import. Thus it is extremely interesting to learn that "male ulcers have a higher percentage of pigmented moles than the females. Approximately 60% of the tuberculosis females also show a very large quantity of pigmented moles," etc. We have not yet attempted to determine statistically just how many people bearing pigmented moles were run over and killed in the year 1923 by automobiles having a zero in their license number, but by analogy such statistics might have some influence on the mortuary statistics for 1925. Unquestionably Dr. Draper intended his tables purely as descriptive data, but even then they would in our opinion have immeasurably been increased in value by a statement of the frequency with which these anatomical landmarks are found in relatively normal people.

The Practical Medicine Series. Comprising eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of CHARLES L. MIX, A.M., M.D. *Volume II.* **General Surgery.** Edited by ALBERT J. OCHSNER, M.D., F.R.M.S., LLD., F.A.C.S., F.R.C.S. Ire (Hon.); President American College of Surgeons; Surgeon-in-Chief Augustana and St. Mary's of Nazareth Hospitals; etc. ustana and St. Mary's of Nazareth Hospitals, Chicago. cago: THE YEAR BOOK PUBLISHERS, 1924.

For several years Ochsner has been editing the surgical volume in this series. The present issue contains a great mass of interesting cases, new points of view and new procedures and instruments from the surgical and allied fields that appeared during the year 1923.

Lang's German-English Dictionary of Terms Used in Medicine and the Allied Sciences. *Third Edition.* Edited and Revised by MILTON K. MEYERS, M.D., Neurologist to the Northern Liberties Hospital; to the Lucien Moss Home, Jewish Hospital; to St. Agnes Hospital Dispensary, Philadelphia, etc. Octavo; 613 pages. Philadelphia. P. BLAKISTON'S SON & COMPANY, 1924.

Dr. Meyers has included 4,000 new terms in this edition which contains about 53,000 definitions. These are only of words that are spelled differently from the English terms having the same meaning. Medicine is an international science. Its devotees should—and in bibliographic research, must—read the products of various languages. The great value of such an excellent dictionary as this is self-evident.

Practical Surgery Illustrated. By VICTOR PAUCHET. Translated by F. R. B. ATKINSON, M.D., C. M. (Edin. Univ.) With an Introduction by SIR CHARLES GORDON-WATSON, C.M.G., F.R.C.S., Surgeon and Joint Lecturer in Surgery, St. Bartholomew's Hospital. In Two Volumes. Octavo; 545 pages; 416 illustrations. London: ERNEST BENN LIMITED, 1924.

The two excellent little volumes presented by the renowned French surgeon are intended primarily as aids to the "provincial surgeon" away from the large city and called upon to do his work without the aid of a well organized operating unit. The author treats of a number of the commoner of surgical procedures and describes the type of operation which to him seems most applicable. The work is so well illustrated and annotated that the text, which has been reduced to a minimum, almost becomes superfluous.

Urologische Operationslehre. Von PROFESSOR DR. FRITZ VOELCKER und DR. ERICH WOSSIDLO. *Zweite Auflage.* Octavo; 654 Seiten; 504 Abbildungun. Leipzig: GEORG THIEME, 1924.

Any work appearing under the authorship of two such eminent urologists and surgeons as Voelcker and Wossidlo is by that very fact alone entitled to the most respectful attention. In the production of this volume, Kümmel, Rubritius, Voelcker, Wossidlo, Blum and others have contributed. Except for the changes consequent upon the rewriting of the chapters previously contributed by Zuckerkandel and the elder Wossidlo there are no important additions or changes made in the second edition.

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LESIONS OF THE TIBIAL TUBERCLE (OSGOOD-SCHLATTER'S DISEASE)

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The purpose of this study is to report a series of seventeen cases demonstrating lesions of the tibial tubercle of the Osgood-Schlatter type.

The cases selected were seen during a period of three and one-half years in the roentgenological department of the Hospital for Joint Diseases. The majority were found in routine examinations of the knee in adolescents, reporting to the hospital for various injuries or ills, in and about that joint.

Reference in the literature to this type of affection dates from a contribution by Key in the *Lancet*, April 15, 1827, and one by DeMayer in the *Medical Times* in 1833. Following the publications of these papers, numerous articles appeared chiefly in the German and French publications. The writers in the main described this condition from a purely clinical and surgical aspect.

With the appearance of the roentgen ray as a diagnostic means, numerous investigators published their observations. The earliest reference in the American publications that discussed the subject from a roentgenological standpoint appears to be those of L. A. Weigel[1] and R. N. Lovett[2] in individual contributions in the *Philadelphia Medical Journal*, January 6, 1900. They published radiographic reproductions of knees showing the condition together with brief descriptive texts. No detailed roentgenological study, however, appeared until the work of Osgood[3] and Schlatter[4] in 1903. Working independently, they reported their observations at about the same time, so that today the disease is rightly named after them. Osgood's original description contained a report of 10 cases together with an anatomical dissection of two knees, with special reference to the mechanics of the production of the injury. Gaudier and Bouret[5] in 1905 brought the literature up to date.

Following these publications there appeared those of Kirschner[6], Bergmann[7], Kienbock[8], Dunlop[9], Graef[10], and Hodgson[11]. Bergmann and Kienbock were of the opinion that these lesions were due to some rachitic change, whereas Graef thought that many of these conditions were due to infection, probably by the staphylococcus. Dunlop's excellent contribution contains a splendid bibliography of the literature. He states—"The impression I have obtained from my studies and observations, leads me to believe that the borderline between the so-called inflammatory lesions of the pretibial tubercle and the actual separations of the tubercle, is one of convenience".

Saule [12] in 1916 described an operation for the fixation of the tubercle to the tibia. The following years were productive of many articles on the subject, among which were those of Stephens[13], Boder[14] and Gibson[15]. Stephens believed that the disease should be classified as an injury and not as a true disease and states that there is always an accompanying inflammatory reaction similiar to a periostitis.

The present conception of the disease is varied. As a result of the somewhat acrimonious debate, chiefly in the German literature, both infection and trauma have been postulated as causative factors. There are basic reasons for the support of both groups. To rigidly classify this condition as solely traumatic or solely infectious, is somewhat hazardous. We have cases that are classified in either group. We would carry Stephen's analogy somewhat further. As it is well known, a periostitis may be produced by local injury or local infection, or as a local manifestation of a general infection. We have then three causes, all different, each of which may be productive of a similar roentgenographic appearance. To assume that a periostitis was always the result of any one specific cause would be to contradict scientific proof. Hence to assume that the changes in the tubercle were always traumatic or always infectious would be to specifically exempt the tubercle from affections common to all osseous structures. The tubercle will react to either trauma or infection as will any structure in the bony frame and it is our contention that both injury and infection may produce the picture noted in these conditions. That trauma is the chief etiological factor is obvious but that infection may produce the same result, must be likewise obvious, from the cases we have studied.

INCIDENCE

We have found no reference to the frequency with which this condition is met. Osgood originally reported 7 cases and Boder 1 case in six years at the Cincinnati General Hospital. There have been numerous reports of several cases in the literature, but I am struck with the scarcity of articles in the

American literature. We have at our institution a series of 17 cases out of 16,000 general roentgenograms. Our figures represent an incidence of about 0.1% of all the plates taken and a total of 0.7% of all the knees examined. When one considers that many of the radiographs were taken of other parts of the body, many of them in adults, in whom this disease does not occur, one is justified in assuming that this condition is considerably more common than is generally believed.

The age series runs from 10 to 15. Most of the cases occurred between the ages of 13 and 14. One case is included, that of a man 31 years old, with typical appearance although not classified as an Osgood-Schlatter's disease.

Most of our cases (15 of the 17) occurred in males. Some writers have found this condition equally prevalent in the sexes. The frequency in the male is accounted for by the greater muscular development as well as the greater activity of this sex. In 5 cases in our series no history of injury was obtained after careful interrogation and of these two were definitely classed as of the infectious epiphysitis type. Of our series 9 cases showed involvement of the left side and 4 of the right side. An unusual finding was the occurrence of bilateral involvement in 4 cases.

SYMPTOMATOLOGY

The commonest symtom complained of is pain over the patellar tendon and pretibial tubercle. It is of somewhat variable character and may come immediately after or may follow months after the original injury. Often of so minor a character as to escape special notice, it is at times extremely severe and sufficient to cause marked disability. It is present at times as a local feeling of discomfort and often it occurs only on exercise of the part. It may be referred along the patellar tendon. It is intermittent in character and often recurs with increasing frequency until medical relief is sought. As a rule it is increased by motion and relieved by rest.

Limitation of motion, chiefly extension, is present as a rule. This symptom is also a variable one and depends on the existing damage to the part. In some the impairment of function is slight and is simply an inability to use the limb with comfort. In others the disability is marked, although no total loss of function was present in any of the cases in our series. Flexion is rarely interfered with, excepting where severe injury has resulted in marked periarticular swelling and synovitis.

Periarticular swelling is commonly present and is usually due to direct trauma to the part. Local contusions or even lacerations of the skin over the site of injury are the result of direct trauma. Pretibial swelling or protrusion is practically always present and in two of our cases this was practically the only condition for which relief was sought. While this latter is usually due to the separation of the tubercle it may at times be the result of the associated bursitis.

A reliable guide is local pretibial tenderness. In few of our cases was this absent. It can best be elicited on pressure over the tibia or rather the apophysis, with the limb in the semi-flexed position, so as to stretch the patellar tendon.

ANATOMICAL CONSIDERATIONS

A study of the anatomy and development of the structures under consideration will assist materially in the proper understanding of this type of affec-

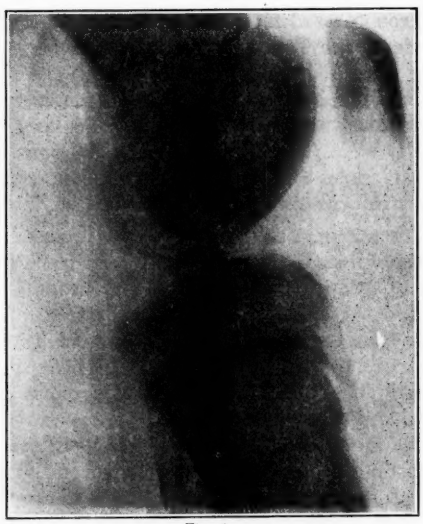

FIG. 1.

tion. We must therefore consider the following:

1. The tubercle of the tibia.
2. The ligamentous attachments.
3. The relations of the bursae to this disease.

The tubercle of the tibia. The development of the tibia proceeds from four centers: one for the shaft, one for the lower epiphysis and two for the upper epiphysis. The centers for the upper end or head appear at birth and are united to the shaft between the ages of 21 and 25. The center for the lower end appears at about 2 and is united to the shaft between the ages of 18 and 19. The tubercle of the tibia develops from the tongue-like protusion of the lower and anterior aspect of the upper epiphysis. Often, however, the tubercle develops from two centers: one from the epiphysis of the head and one from the shaft proper. Our series include tubercles formed from three centers one from the shaft and two from the upper epiphysis. Two points from this study are then immediately evident; first, that while the center of ossification of the head appears first it is nevertheless the last to unite with the shaft and is not completely united at the age of greatest physical activity, and second, points of union are often present in the tubercle it-

self, permitting during the stages of development, of easy separation of the fragments[16].

2. *The ligamentous attachments.* The patella, the largest sesamoid bone in the body, is developed within the tendon of the quadriceps femoris, which is one of the largest, as well as strongest tendons in the human frame. By means of this tendon the patella is attached to the tubercle of the tibia. Aponeurotic fasiculi of the quadriceps form the patellar tendon and are continued as small strands from the tubercle to the lateral surfaces of the tibia at its upper end.

The patella is thus supported by, or suspended between dense fibrous bands and rides comparatively free between these two attachments. Nature has here employed an engineering principle. The point of interest in this connection is that the pier of the suspensory bridge is the tubercle and that the anchorage is further reinforced by the lateral restraining trusses or guy ropes of the terminal filaments of the patellar tendon attached to the tibial shaft proper.

The upper attachment of the patella is movable within the limits of contractility of the quadriceps femoris. The only fixed point at the knee so far as we are here concerned, is the tibial tubercle. The degree of motion in and about the knee joint will of necessity depend on the integrity of the pier head.

3. *The relations of the bursae of the knee.* These are:

1. Prepatellaris, subtendinea, between the tendon of the quadriceps and periosteum of the patella.
2. The three prepatellar bursae:
   a. Subcutaneous
   b. Subfascial
   c. Subtendinous.

There may be only two bursae instead of three and these connect laterally with the synovial membrane of the knee.

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ROENTGENOLOGICAL FINDINGS

For purposes of analytical study the roentgenological aspect of this condition will be considered from its effects on the bone, and on the soft parts. Although coexisting to a variable degree, they are nevertheless deserving of independent discussion.

Fig. 2.

Bone Changes. It is axiomatic that the degree of the force applied will determine the extent of the damage to the bony parts.

In mild muscular efforts very little or no injury, or at least a partial, incomplete, variable amount of separation of the apophysis results. Dunlop's cases of strain of the tubercle would come under this category. These cases may be negative radiologically or at least present a negligible or hardly discernible separation of the part. In these mild cases, the clinical symptoms are at times more marked than would be expected from the examination of the roentgenograms. We wish to emphasize that the clinical examination is as necessary here as is the investigation of any other type of pathologic process.

In direct trauma or severe muscular strains more extensive separation results. The amount of separation will depend on the degree of development of the part. In tubercles formed from the epiphysis of the head, the separation is, as a rule, *en masse*, and a definite space may be demonstrated between the tubercle and its osseous attachment. Figure 3

American literature. We have at our institution a series of 17 cases out of 16,000 general roentgenograms. Our figures represent an incidence of about 0.1% of all the plates taken and a total of 0.7% of all the knees examined. When one considers that many of the radiographs were taken of other parts of the body, many of them in adults, in whom this disease does not occur, one is justified in assuming that this condition is considerably more common than is generally believed.

The age series runs from 10 to 15. Most of the cases occurred between the ages of 13 and 14. One case is included, that of a man 31 years old, with typical appearance although not classified as an Osgood-Schlatter's disease.

Most of our cases (15 of the 17) occurred in males. Some writers have found this condition equally prevalent in the sexes. The frequency in the male is accounted for by the greater muscular development as well as the greater activity of this sex. In 5 cases in our series no history of injury was obtained after careful interrogation and of these two were definitely classed as of the infectious epiphysitis type. Of our series 9 cases showed involvement of the left side and 4 of the right side. An unusual finding was the occurrence of bilateral involvement in 4 cases.

SYMPTOMATOLOGY

The commonest symtom complained of is pain over the patellar tendon and pretibial tubercle. It is of somewhat variable character and may come immediately after or may follow months after the original injury. Often of so minor a character as to escape special notice, it is at times extremely severe and sufficient to cause marked disability. It is present at times as a local feeling of discomfort and often it occurs only on exercise of the part. It may be referred along the patellar tendon. It is intermittent in character and often recurs with increasing frequency until medical relief is sought. As a rule it is increased by motion and relieved by rest.

Limitation of motion, chiefly extension, is present as a rule. This symptom is also a variable one and depends on the existing damage to the part. In some the impairment of function is slight and is simply an inability to use the limb with comfort. In others the disability is marked, although no total loss of function was present in any of the cases in our series. Flexion is rarely interfered with, excepting where severe injury has resulted in marked periarticular swelling and synovitis.

Periarticular swelling is commonly present and is usually due to direct trauma to the part. Local contusions or even lacerations of the skin over the site of injury are the result of direct trauma. Pretibial swelling or protrusion is practically always present and in two of our cases this was practically the only condition for which relief was sought. While this latter is usually due to the separation of the tubercle it may at times be the result of the associated bursitis.

A reliable guide is local pretibial tenderness. In few of our cases was this absent. It can best be elicited on pressure over the tibia or rather the apophysis, with the limb in the semi-flexed position, so as to stretch the patellar tendon.

ANATOMICAL CONSIDERATIONS

A study of the anatomy and development of the structures under consideration will assist materially in the proper understanding of this type of affec-

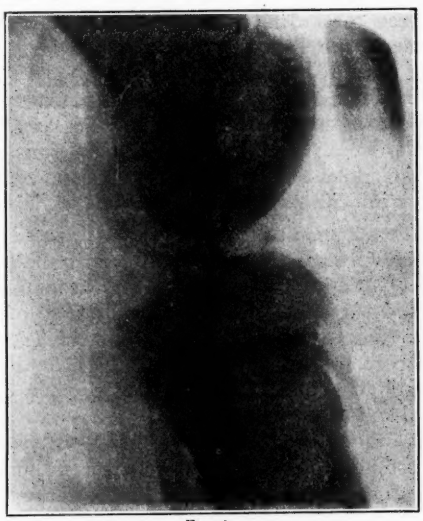

FIG. 1.

tion. We must therefore consider the following:

1. The tubercle of the tibia.
2. The ligamentous attachments.
3. The relations of the bursae to this disease.

The tubercle of the tibia. The development of the tibia proceeds from four centers: one for the shaft, one for the lower epiphysis and two for the upper epiphysis. The centers for the upper end or head appear at birth and are united to the shaft between the ages of 21 and 25. The center for the lower end appears at about 2 and is united to the shaft between the ages of 18 and 19. The tubercle of the tibia develops from the tongue-like protusion of the lower and anterior aspect of the upper epiphysis. Often, however, the tubercle develops from two centers: one from the epiphysis of the head and one from the shaft proper. Our series include tubercles formed from three centers one from the shaft and two from the upper epiphysis. Two points from this study are then immediately evident; first, that while the center of ossification of the head appears first it is nevertheless the last to unite with the shaft and is not completely united at the age of greatest physical activity, and second points of union are often present in the tubercle it

checked up by measurements and *x*-ray examinations at the time of injury will prevent many mistakes. Re-examination clinically at frequent intervals, if *x*-rays are not made, will reveal the case in which the impaction

percentage of pigmented moles than the females. Approximately 60% of the tuberculosis females also show a very large quantity of pigmented moles," etc. We have not yet

self, permitting during the stages of development, of easy separation of the fragments[16].

2. *The ligamentous attachments.* The patella, the largest sesamoid bone in the body, is developed within the tendon of the quadriceps femoris, which is one of the largest, as well as strongest tendons in the human frame. By means of this tendon the patella is attached to the tubercle of the tibia. Aponeurotic fasiculi of the quadriceps form the patellar tendon and are continued as small strands from the tubercle to the lateral surfaces of the tibia at its upper end.

The patella is thus supported by, or suspended between dense fibrous bands and rides comparatively free between these two attachments. Nature has here employed an engineering principle. The point of interest in this connection is that the pier of the suspensory bridge is the tubercle and that the anchorage is further reinforced by the lateral restraining trusses or guy ropes of the terminal filaments of the patellar tendon attached to the tibial shaft proper.

The upper attachment of the patella is movable within the limits of contractility of the quadriceps femoris. The only fixed point at the knee so far as we are here concerned, is the tibial tubercle. The degree of motion in and about the knee joint will of necessity depend on the integrity of the pier head.

3. *The relations of the bursae of the knee.* These are:

1. Prepatellaris, subtendinea, between the tendon of the quadriceps and periosteum of the patella.
2. The three prepatellar bursae:
   a. Subcutaneous
   b. Subfascial
   c. Subtendinous.

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checked up by measurements and *x*-ray examinations at the time of injury will prevent many mistakes. Re-examination clinically at frequent intervals, if *x*-rays are not made, will reveal the case in which the impaction breaks down. In case of non-union, the bone pegging operation, preferably using the fibula, is the most efficacious. When the neck of the femur is practically gone, the reconstruction operations of Brackett and Whitman should be considered. It should be remembered, however, that firm fibrous union in some instances is quite adequate for the demands of function in the declining years of life.

The Sacro-Iliac Joint: Its Diagnosis as Determined by the X-Ray. Byron C. Darling, New York. *Radiology*, December, 1924.

Backache has more to do with the soft tissue, ligaments, muscle fibers, bundles and sheaths, nerves and neuralgias, than dislocations of joints. Sprains, sacro-iliac and lumbo-sacral, seem more likely than demonstrable relaxations or subluxations.

The sacro-iliac joint has a synovial lining and is, therefore, subject to arthritis, due to any focus of infection.

Sacro-iliac strain, relaxation, subluxation or dislocation may exist clinically, but cannot be shown definitely by the *x*-ray examination if and when "the motion consists of a forward and backward tilting of the sacrum in relation to the ilium" (Goldthwait).

Where there is actual separation of the pelvic girdle, such as complete fracture with displacement or a complete separation at the symphysis, then only will there be shown by the *x*-ray a definite sacro-iliac separation or relaxation.

Radiographs made improperly are often misinterpreted as showing separations that do not exist. This is a too common error, due to zealous attempts to make or support a diagnosis. The weight of opinion among experienced roentgenologists is in the negative, and is almost unanimous.

Book Reviews

Human Constitution. A Consideration of Its Relationship to Disease. By George Draper, M.D., Associate in Medicine at Columbia University, New York. Octavo; 345 pages; 208 illustrations; 105 tables. Philadelphia and London: W. B. Saunders Company, 1924.

For as long as man has endeavored to know himself, he has attempted to group his fellow men into certain categories suggested by peculiarities of the physical make-up. And as a consequence of the careful observation of earlier clinicians, we have segregated certain types, such as the acromegalic, the Froelich, the dwarf type and so on. In recent years, particularly on the European continent, the study of the human constitution, of the organism as a whole in its relation to its environment, in its predisposition to disease, has been undertaken with great assiduity. As a result, we now speak of "diatheses" and "facies." Doubtless, it might be postulated that the same factors which determined X's peculiar cast of countenance might possibly be at the root of his predisposition to ulcer formation, but the present state of our statistical information seems to be a trifle too incomplete to enable us to prognosticate with any assurance of success that such a gonal angle or such a manubrial length indicates the formation of gall-stones, or mayhap pernicious anemia. Dr. Draper, in the first of a series of monographs dealing quite simply with man, has unfortunately left his work open to such a cynical interpretation. In this "panel" man is considered from an anatomic point of view. Six or seven diseases, among them gall bladder disease, arteriosclerosis, nephritis, etc., are studied from a biometric standpoint. The mass of statistical information gathered will doubtless prove of great value ultimately, but at present these data should be submitted as purely descriptive facts without the slightest suggestion of diagnostic import. Thus it is ex-

percentage of pigmented moles than the females. Approximately 60% of the tuberculosis females also show a very large quantity of pigmented moles," etc. We have not yet attempted to determine statistically just how many people bearing pigmented moles were run over and killed in the year 1923 by automobiles having a zero in their license number, but by analogy such statistics might have some influence on the mortuary statistics for 1925. Unquestionably Dr. Draper intended his tables purely as descriptive data, but even then they would in our opinion have immeasurably been increased in value by a statement of the frequency with which these anatomical landmarks are found in relatively normal people.

The Practical Medicine Series. Comprising eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A.M., M.D. *Volume II.* **General Surgery.** Edited by Albert J. Ochsner, M.D., F.R.M.S., LL.D., F.A.C.S., F.R.C.S. Ire (Hon.); President American College of Surgeons; Surgeon-in-Chief Augustana and St. Mary's of Nazareth Hospitals; etc. Augustana and St. Mary's of Nazareth Hospitals, Chicago. Chicago: The Year Book Publishers, 1924.

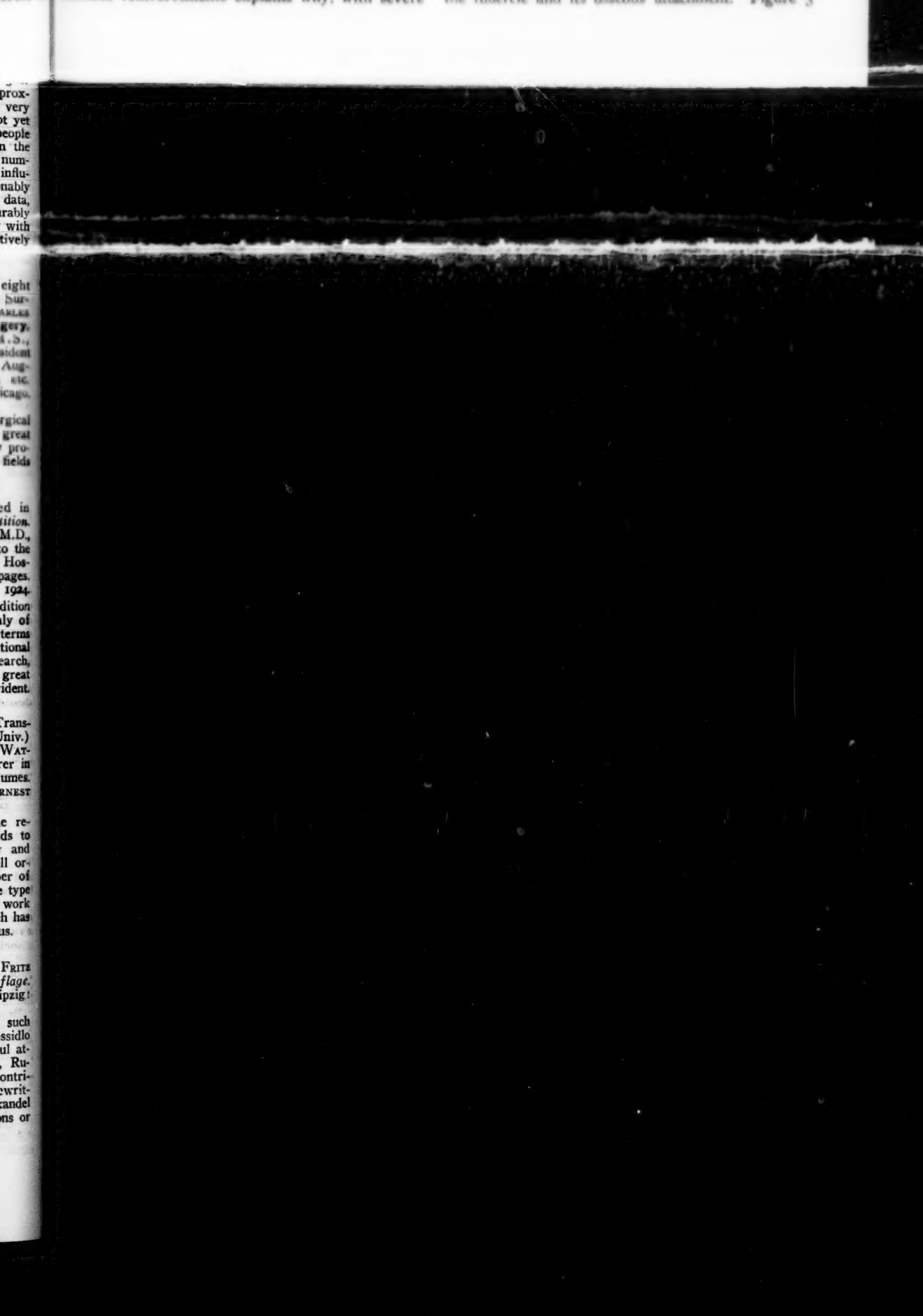
For several years Ochsner has been editing the surgical volume in this series. The present issue contains a great mass of interesting cases, new points of view and new procedures and instruments from the surgical and allied fields that appeared during the year 1923.

Lang's German-English Dictionary of Terms Used in Medicine and the Allied Sciences. *Third Edition.* Edited and Revised by Milton K. Meyers, M.D., Neurologist to the Northern Liberties Hospital; to the Lucien Moss Home, Jewish Hospital; to St. Agnes Hospital Dispensary, Philadelphia, etc. Octavo; 613 pages. Philadelphia. P. Blakiston's Son & Company, 1924.

Dr. Meyers has included 4,000 new terms in this edition which contains about 53,000 definitions. These are only of words that are spelled differently from the English terms having the same meaning. Medicine is an international science. Its devotees should—and in bibliographic research, must—read the products of various languages. The great value of such an excellent dictionary as this is self-evident.

Practical Surgery Illustrated. By Victor Pauchet. Translated by F. R. B. Atkinson, M.D., C. M. (Edin. Univ.) With an Introduction by Sir Charles Gordon-Watson, C.M.G., F.R.C.S., Surgeon and Joint Lecturer in Surgery, St. Bartholomew's Hospital. In Two Volumes. Octavo; 545 pages; 416 illustrations. London: Ernest Benn Limited, 1924.

The two excellent little volumes presented by the renowned French surgeon are intended primarily as aids to the "provincial surgeon" away from the large city and called upon to do his work without the aid of a well organized operating unit. The author treats of a number of the commoner of surgical procedures and describes the type of operation which to him seems most applicable. The work is so well illustrated and annotated that the text, which has been reduced to a minimum, almost becomes superfluous.

Urologische Operationslehre. Von Professor Dr. Fritz Voelcker und Dr. Erich Wossidlo. *Zweite Auflage.* Octavo; 654 Seiten; 504 Abbildungun. Leipzig: Georg Thieme, 1924.

Any work appearing under the authorship of two such eminent urologists and surgeons as Voelcker and Wossidlo is by that very fact alone entitled to the most respectful attention. In the production of this volume, Kümmel, Rubritius, Voelcker, Wossidlo, Blum and others have contributed. Except for the changes consequent upon the rewriting of the chapters previously contributed by Zuckerkandel and the elder Wossidlo there are no important additions or changes made in the second edition.